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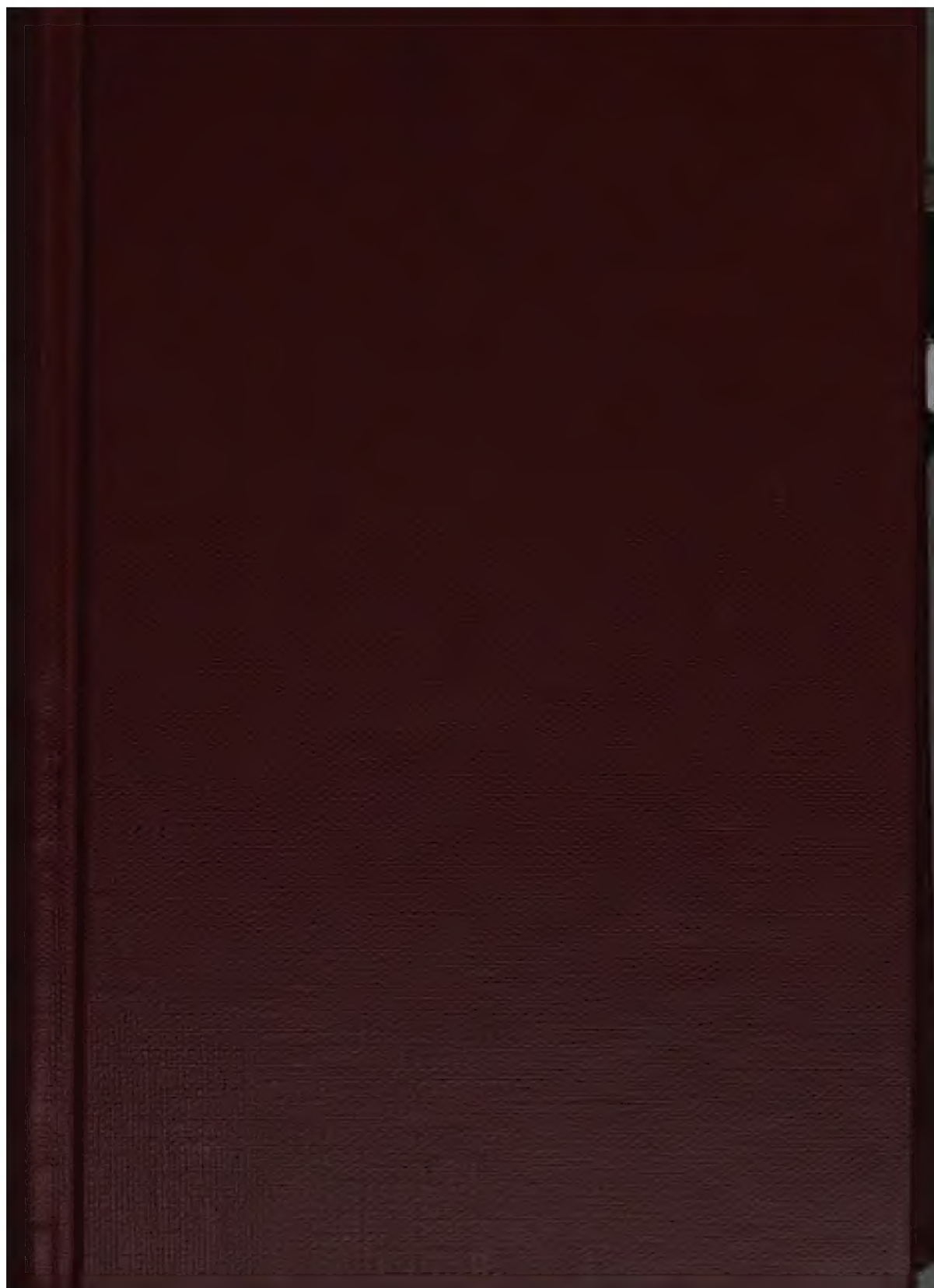
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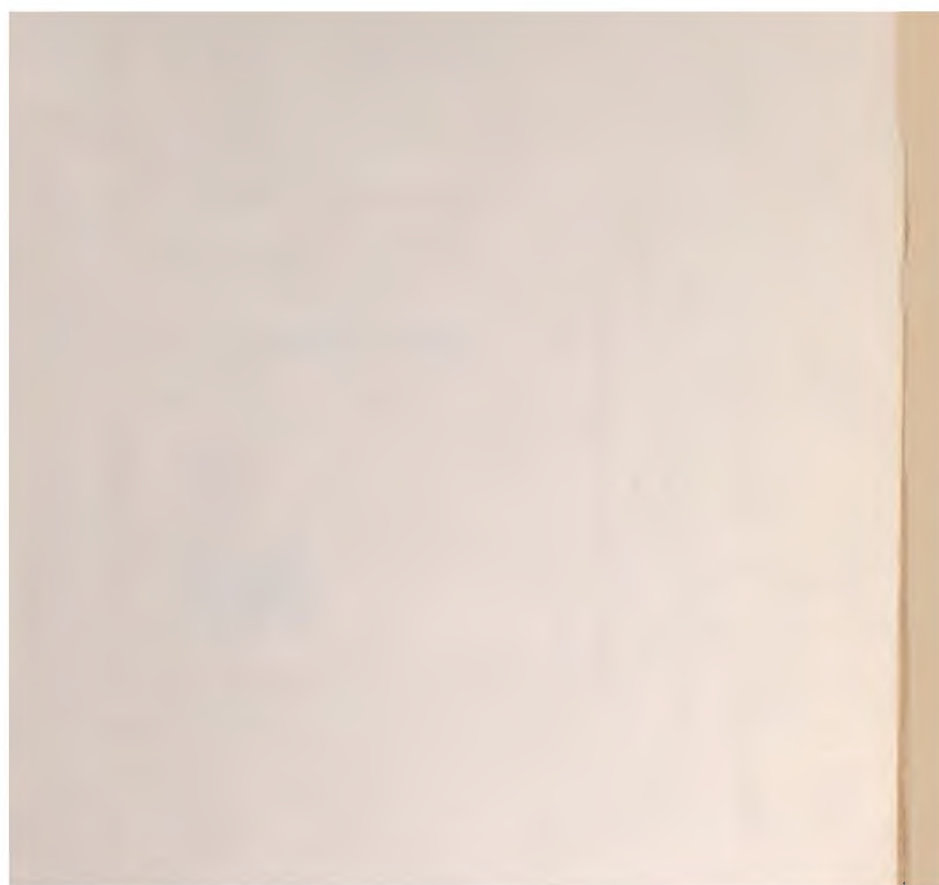
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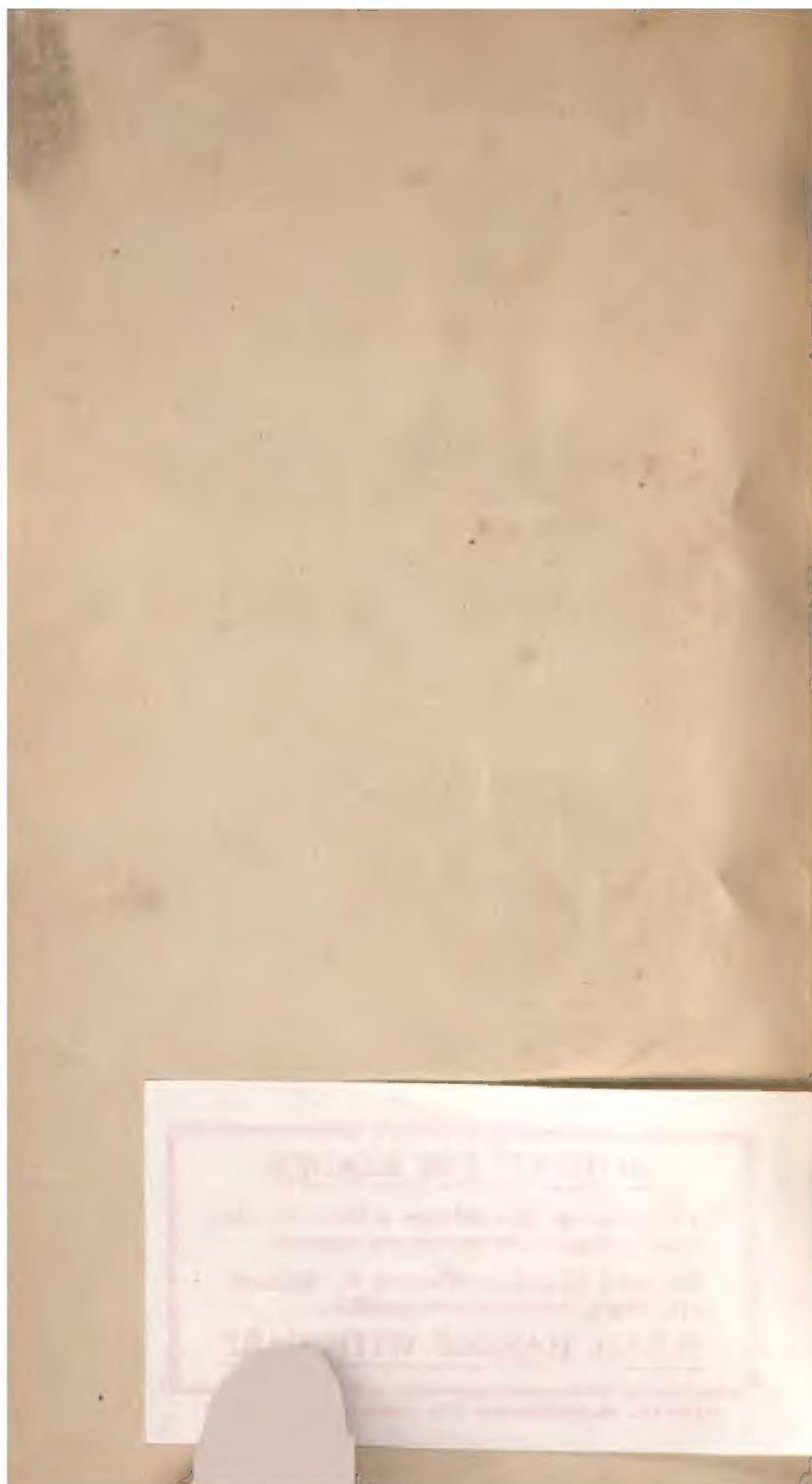
and Darwin 1813. 475
 John Norton 1849
 Robert Thomson 1856, 1854, 1856.
 Translations for working people 1856, 1853, 1856, 1860, 1861, 1865, 1866, 1868.
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Royal Society of Arts, London.

REPORTS OF ARTISANS

SELECTED BY

A COMMITTEE APPOINTED BY THE COUNCIL

OF THE

SOCIETY OF ARTS

TO VISIT THE

PARIS UNIVERSAL EXHIBITION,

1867.



LONDON:

PUBLISHED FOR THE

Society for the Encouragement of Arts, Manufactures, and Commerce.

BELL AND DALDY, YORK-STREET, COVENT-GARDEN.

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PREFACE.

THE Council of the Society of Arts, feeling the importance of promoting the intelligent study of the Paris Exhibition and the manufacturing establishments in France by artisans of the United Kingdom, in the early part of this year passed the following minute:—

At the last and former International Exhibitions held in this country, arrangements were made by the French Government to facilitate the visits of skilled artisans, and interesting reports on the exhibitions were made by them to their government. Believing that such visits on the part of skilled workmen to these great international displays not only exercise a beneficial influence upon the men themselves, but also upon the progress of industry in the country to which they belong, the Council of the Society of Arts have resolved to raise a fund to be employed in aiding a limited number of English workmen to proceed to Paris for the purpose of studying the present French Exhibition.

To carry this object into effect, they have agreed on the following plan:—

1st. That a number of selected workmen (the number to depend on the amount of funds at the disposal of the Council) shall be assisted to proceed to and remain in Paris a sufficient time (say three weeks) for the purpose of making a careful study of the Exhibition, and of such factories and workshops as they may desire to visit.

2nd. That every man so assisted shall, on his return, make a report to the Society of what he has observed during his stay, in reference to the special industry in which he is engaged, and that it be made a condition of the grant to each man that one-third of the amount be retained until his report shall be supplied to the Society.

3rd. The Council think it will be undesirable to fix the exact time for, or to prescribe the duration of, these visits, or to interfere with any of the arrangements the men may desire to make for their own accommodation; but, in order that they may take advantage of the facilities provided by the Commission organised by the French Government for the study of the Exhibition, the men will be placed in communication with that Commission on their arrival in Paris.

4th. A considerable sum will be required satisfactorily to accomplish the important object undertaken by the Society, and, in order to raise these funds, the Council have determined to appeal to the members of the Society, who must be interested in the successful results of this movement, in the belief that they will not hesitate to join in a subscription for the furtherance of the undertaking; and they propose at the same time to communicate with the various Chambers of Commerce, inviting their counsel and support. The Council have decided to commence the subscription by a vote of one hundred guineas from the funds of the Society.

The Council, in accordance with this minute, invited a special subscription, and an appeal was made, especially to the Chambers of Commerce of the United Kingdom, to the principal City Companies, and to other influential public bodies, as well as to members of the Society of Arts and the public in general, for contributions.

At a very early period His Royal Highness the Prince of Wales, President of the Society, expressed his approval of the undertaking, and forwarded a subscription of thirty guineas.

The Council addressed a letter to Her Majesty's Commissioners for the Exhibition, asking their assistance in obtaining pecuniary aid from the Government, to enable them to realize their plan on a sufficiently extensive scale. Her Majesty's Commissioners thereupon passed the following resolution, which was proposed by Earl Granville, and seconded by Mr. Forster, M.P.:—"That the intention of obtaining reports by foremen and skilled workmen on their respective trades, on the occasion of their visiting the Paris Exhibition, is, in the opinion of Her Majesty's Commissioners, worthy of encouragement on the part of Her Majesty's Government."

This resolution having been transmitted by Her Majesty's Commissioners to the Lords of the Committee of Council on Education, their lordships decided to "place at the disposal of the Society of Arts a sum not exceeding five hundred pounds, provided that the Society raises at least the same amount by voluntary subscriptions."

The sum subscribed amounted to £1,039 19s. 6d., which enabled the Council to assist upwards of eighty skilled workmen, representing the principal industries of the country, to visit Paris, and to examine the quality and cost of the work executed in their respective trades by the best workmen of foreign countries. In consequence of the desire of a large number of workmen in London and other seats of industry to avail themselves of this assistance, the Committee to whom the duty of selection was entrusted, sometimes found it difficult to decide between the claims of the numerous applicants; each man who was chosen either brought a recommendation from his employers, or from a number of his fellow-workmen, and in some instances from both, guaranteeing his fitness to undertake the task assigned to him. The endeavour was to select men whose intelligence and knowledge of their particular trades, and whose position among their fellow-workmen, were such that their reports on their respective branches of industry would not only be good in themselves, but would command the attention of their fellow-workmen.

The Council received valuable co-operation from the members of the Chamber of Commerce at Birmingham, who subscribed liberally to the fund, and recommended twenty-five workmen and foremen to represent the various branches of trade carried on in that district.

The visit of the workmen from Birmingham was organised by a local committee, who received valuable aid from Mr. W. C. Aitken,*

* Mr. Aitken was one of the annotators of the "Descriptive and Illustrated Catalogue of the Great Exhibition of 1851," and is the author of reports on "Brass Manufactures," "The Revived Art of Metal Working," "The Production of Statuary in Bronze, Copper, &c.," in a work known as "The Industrial History of Birmingham."

of that place, a gentleman well known for the interest he has long taken in the progress of industry. He accompanied the men to Paris, and has himself made a report, which forms the introduction to the reports of the Birmingham artisans, which constitute Part II. of this volume. Many of the subjects treated by them have also been reported on by men sent from London or elsewhere; and it will be observed that several of the more important trades had two or three representatives, it having been thought desirable in many cases to obtain the opinion of more than one individual upon the same branch of manufacture.

The Chambers of Commerce of Bradford and Nottingham and the Mayors of Sheffield and Coventry also afforded considerable assistance to the Society, and in some instances recommended workmen competent to report on the trades of their respective districts.

The workmen were accredited in Paris to M. Haussoullier, who had been appointed by Her Majesty's Commissioners to the charge of the British Workman's Hall in the Exhibition building. This gentleman not only procured for them lodgings, and afforded them useful hints in visiting the Exhibition, but was indefatigable in his efforts to obtain permission for them to visit the manufactories and workshops connected with their respective trades, facilities which (with very few exceptions) were readily and courteously afforded by the French manufacturers. The Society of Arts also secured the special services of M. Fouché (an artisan-member of the Conseil des Prud'hommes) as interpreter, who accompanied the men in their visits to the Exhibition and to the various industrial establishments just referred to. The services of these gentlemen were most valuable, and are so warmly acknowledged by the men themselves in their reports, that further remarks upon them are needless.

The men were received in the most friendly manner by the French workmen, and it is gratifying to find that their conduct whilst in Paris, and the intelligence they displayed in their inquiries, were so appreciated by the French authorities at the Exhibition, that they have applied for permission to translate the reports for circulation among French workmen.

Besides the reports upon particular branches of industry, two special reports on "The Condition and Habits of the French Working Classes" have been made by Mr. Robert Coningsby and Mr. Richard Whiteing.

The volume has been edited by Mr. Charles Critchett, the Assistant-Secretary of the Society of Arts, who has kept carefully in view the wishes of the Council that the reports should, as far as possible, be presented to the public in their integrity. All such forms of expression as, though not strictly in accordance with grammatical rules, appeared to convey more forcibly than any other the writer's meaning, have been retained, and only such literal and

grammatical corrections (with a few trifling omissions) have been made as were absolutely essential. The reports bearing upon cognate branches of industry have been generally kept together, but this was not always possible, as the order was sometimes necessarily regulated by the dates of their reception by the Society. It is hoped they will be found interesting not only to the writers' fellow-workmen, but to all interested in the progress of industry; and, considering that they are written by men, most of whom have never before attempted to write a report on any subject, and all of whom are actually engaged in industrial occupations, they are, in most cases, highly creditable to their authors, and will, no doubt, be received with the consideration they deserve.

By order of the Council,

W. HAWES, *Chairman,*

P. LE NEVE FOSTER, *Secretary.*

*Society of Arts,
John-street, Adelphi, London,
Christmas, 1867.*

CONTENTS.

PART I.

REPORTS BY ARTISANS FROM LONDON, SHEFFIELD, COVENTRY, BRADFORD,
NEWCASTLE-UNDER-LYNE, &c.

	PAGE
Cabinet-making	Charles Alfred Hooper 1
Ceramic decoration	Aaron Green 26
Saws and tools	William Bramhall 37
Cutlery	John Wilson 62
Chair-making	Benjamin Lucraft 64
Glass-painting	Francis Kirchhoff 70
Wood-carving	James Mackie 84
"	R. Baker 102
Cabinet-work	Thomas Jacob 107
Wood-cutting machinery	William Walker 118
The Ribbon trade "	Thomas J. Wilkie 124
Ribbon-weaving	L. S. Booth 133
Loe	Joseph Gutteridge 141
History	Edward Smith, Joseph Bird, and George Dexter 144
History	George Kendall and George Caunt 164
History	William Beardmore 168
Tile and pavements	Samuel Cooper 160
Terra-cotta	Michael Angelo Pulham 169
Pottery and porcelain, with some notes on their manufacture	John Randall 178
Brick-laying	George Howell 189
"	John Jeffery 200
Plasterers' work	C. Bartlett 204
Carpenters' and joiners' work	T. W. Hughes and John D. Prior 209
Joiners' work	Alexander Kay 219
Masonry, &c.	George Broughton Forbes and John McEwen 245
"	Thomas Connolly 250
Coath-making	Thomas Magrath 271
Ship-building	E. F. Mondy 277
Mining and metallurgy	Francis Oate 289
Ship-work	P. A. Rasmussen 296
"	George Page 520
Ship-chasing	R. E. Barrett 321
Rammed iron	William Letheren 324
Ornamental wrought-iron work	T. Winstanley 327
Iron-working	Joseph Bentley 330
Engraving	G. Berry 332
Engraving especially adapted to silver- cups and other metal trades	William Elliott 339

PART I.

REPORTS BY ARTISANS

FROM

**LONDON, SHEFFIELD, COVENTRY, BRADFORD, NEWCASTLE-
UNDER-LYNE, &c.**

ARTISANS' REPORTS

ON THE

PARIS UNIVERSAL EXHIBITION OF 1867.

CABINET MAKING.

By CHARLES ALFRED HOOPER,

CABINET MAKER, LONDON.

HAVING been enabled, through your kindness, to accomplish a very long looked-for desire, I beg respectfully to lay before you the following report of my doings in Paris. I cannot do better than give you my impressions as I noted them down day by day during my fortnight's stay in that wonderful city.

I took an excursion ticket, and paid for a fortnight's lodgings, at the "Paris Excursion Committee," in the Strand. We left London-bridge station at 12.15 a.m. on Tuesday, September 3rd. Arrived at Newhaven at 2.15. Boat left at 5.30. Weather fine and pleasant. My first voyage across the sea. Was a little sea-sick. Arrived at Dieppe soon after 12 p.m. A dozen of us took up our quarters in a comfortable café, to wait for the 6.20 a.m. train for Paris. At 3.30 a most terrific thunder-storm. Rain fell in torrents. We watched from the casement window, thankful that we were so comfortably housed. Left Dieppe at 6.30 for Paris. We were now on French soil. How strange and novel everything appears. The trees so straight and tall. Some are broad and stumpy. The scenery is lovely; such hills and dales, and the pretty appearance of the white cottages. We are much amused to see the women on the line, at the stations, with large shiny hats, holding the signal flags. We arrive at the station, in the Rue St. Lazare, 1.25, and walk to the Rue de Rivoli, as our guide-book had told us we should there find an elegant and cheap café, kept by M. Duval, where we could dine. As I pass through the wide streets I am delighted with everything I see. The houses so lofty and clean and white, the novel appearance of the trees planted along the pavements, the fine buildings, the massive bronze lamps, and the magnificent cafés, the tinkling of the bells on the horses, so singular to my ear. After a much longer walk than we anticipated, we (three of us) arrive at the café. As we enter, a gent sitting at a desk presents us with a billet. We take our seats.

Smart-looking young women, in clean aprons and starched white caps, attend us. We are all in a fix. What to ask for, and how to be understood. However, after a little thought, some antics, and a good deal of joking, we get some soup, bread, beef, and a bottle of wine, but the greatest puzzle was how to get some vegetables. Looking at the billet, I wrote down "*légumes*." They did not know (as I afterwards found) what kind of vegetables we wanted, so there were all sorts of dumb motions performed, till at last they brought us some French beans. Our dinner cost about a franc each. We were much amused to see the bakers bringing in bundles of bread, in loaves from 6ft. to 8ft. long, and stacking them in a corner, like bundles of sticks. We left. Then took 'bus. Got to our lodgings about five, "in the Place Rapp, Champ de Mars." After having rested a little, and washed, it is proposed we shall go for a walk. I like the *logements* (I must begin to use French terms), which are clean and novel. We fancy ourselves soldiers in barracks. Single beds, and four in each room. All our companions appear to be respectable men, of the middle and working class. We cross over to the "Exposition," just to have a glance at the exterior. The people are coming out in crowds, and hurrying to the omnibuses. We find the building closes at six, but the park remains open till 11. We propose to take 'bus, and ride to the "Boulevards," of which I had read and heard so much. Now commenced our first difficulty in French customs. John Bull like, we thought we could rush through the crowd and mount the 'bus in a twinkling. Not so. We have to go to an office near and get tickets, with numbers on, then to the 'bus and wait our turn—an admirable arrangement, we afterwards found, although at the time our impatience overruled our judgment; and what a ride for 1½d., from the Madeleine to the Bastille. Our first evening in Paris we could scarcely believe our senses. It is dark. The Boulevard is crowded. The splendid shops, the grand cafés, the magnificent buildings, the brilliant illuminations, the long lines of trees and lamps, the people sitting in the open air, at neat little marble tables, taking their wine, smoking cigars, or sipping their coffee, under the trees, the handsome French waiters, with their clean napkins and their polite attentions, the orderly conduct of the French people, the soldiers in their gay costumes, the women in their neat dresses and pretty white caps. To us, it is fairyland. We remark that there cannot be anything like it in the world. We return by 'bus, get to our *logements*, and to bed at 11, to sleep! perchance to dream! I woke early in the morning. I can't say I slept well, for the excitement of the previous day made me very wakeful, it being my first night in a strange city, hundreds of miles away from home. I found also that the partitions in our rooms were so slight that the least movement or talking in the next apartment could be distinctly heard, as though it was in the same room. Having breakfasted at a café near, and having learned to take my coffee out of a basin with a table spoon, I got a weekly ticket for the Exposition, entered through "Porte Rapp," and soon found the British Workman's Hall, a nice comfortable room, fitted with every convenience for reading, writing, meeting friends, making appointments, and obtaining every information. This I consider a great boon to a stranger in a strange land. Having seen Mr. Hausaoullier, to whom I

had a card of introduction, also Mr. Glazier, with one or two others I had met in London, I fell in with Mr. Lucraft, who told me a party was going to pay a visit to the Hotel de Ville, headed by a guide. It appears that this is the only difficult place in Paris to get a sight of, as it requires a special permission from the "Préfet de la Seine," so, previous to starting, Mr. L. and myself entered the third gallery to see some of the furniture, I being in the cabinet line, he in the chair business. Just as we got to the French department, and were admiring a beautiful cabinet purchased for the South Kensington Museum, we heard a little commotion to our right: it was the Empress of France. I was agreeably surprised to find myself so close to Her Majesty, but how much more was I in noticing the admirable conduct of the visitors in the building—no pushing, no crowding, no policeman to drive us back, no shouting to clear the way—although there were plenty of officials in all parts of the building—everyone quietly stood and formed a passage. As Her Majesty passed we raised our hats: she smiled and bowed, and conversed with two gentlemen and three ladies who accompanied her, and occasionally stopped to notice or admire some beautiful work of art. I must here notice that Her Majesty was dressed plain and neat, in black silk and lace. Had we not heard it whispered by our side that it was the Empress, we should not have known her from any other private lady. Thus on my first visit to the Exposition did I remark with surprise the contrast between the polite conduct and good sense of the French, and what I have experienced among my own countrymen in London. After this I went with Mr. L. and a party of 50 to the Hotel de Ville. We enter the building two by two. I have never seen the inside of the Mansion House in London, and therefore cannot form a comparison. I remarked to an English lady present, who could speak French, that it was very grand, very astonishing to me: "Oh," said she, "it is all gilded rubbish, not worth coming to see;" and she wondered why they made such a fuss over it by compelling us to go through so much trouble to get inside. However, she recommended me to go to Versailles, where I should be highly gratified. Left the Hotel de Ville, crossed over to the Tower of St. Jacques, mounted its 300 steps, and were well rewarded for our exertions by having a fine view of Paris—the river with its numerous bridges. How clear everything is to view! No smoke, no London smuts, as they burn wood, not coal. Not far from us is the ancient cathedral of Notre Dame. We descend and visit this quaint-looking structure. We notice that the coachmen in driving through the streets keep the right-hand side; and the conductors of the omnibuses have a seat, which lifts up and down, at the door. They do not stand all the time, as in London, nor call out to the people; nor do they chaff one another as they pass, to the great annoyance of passengers in our civilised country.

I cannot help being struck with the marked contrast between the well-ordered conduct of the public streets and public buildings to what I am accustomed to at home. Myself and two friends (who, by the bye, are only casual acquaintances, having fallen in with each other in the train, *en route*), return by omnibus to the Exposition, where we meet some English, Irish, and Scotch excursionists, and I accidentally fell in with a gentleman whom I had seen with the committee on one occasion

at the office of the Society of Arts. I made myself known to him, telling him of the pleasure I had experienced so far, and how thankful I was to the Society for having enabled me to realise a dream of years, and which I could not have accomplished without their aid. He very kindly offered to escort us through the grounds, and away out through the grand entrance, over the Pont de Jena. We mounted that wide flight of steps, and away we marched to the Arc de Triomphe. It being a very fine night we walked on, inquiring and talking, getting as much information as possible of the wonders of Paris, until we got to the Parc de Monceaux, the gentleman very kindly pointing out and explaining everything of interest by the way. On the road we hear signs of merriment in the distance: presently we see a van approaching, full of joyous workmen in blouses; they are singing French songs; the van is hung round with Chinese lanterns; they are going home, sober and happy, from some excursion. I think for the moment of a similar scene in London; but they gone through Holborn in this same manner, hundreds of boys would have followed and roared and shouted, and would have smashed every lantern on the van; here the people simply looked and smiled as they passed. Again, I thought of a party of British workmen returning from a bean-feast, as I have often seen them, roaring drunk, swearing, and bawling, and stopping at every "public" to drink, and "drive dull care away."

It may be considered by some, that having only just arrived in Paris, I am suddenly carried away in favour of the Parisians, and am commencing my criticisms too soon on my English life and manners. However, I must say, that the few hours' experience I had in the French capital on my arrival, soon made me ashamed of my boorish manners, and I felt that I had entered a school where I had everything to learn over again. We stop and enter a pretty-looking refreshment booth, it is called a German brasserie, a charming little place, light, airy, and lit with handsome chandeliers, tables and seats arranged each side of the interior; we raise our hats as we enter, after the French fashion (which I am now beginning to learn), and take a seat; a clean, polite *garçon* (or waiter) brings us some "bock," which, in appearance and taste, is not unlike our bottled ale. I notice around me men with wives, or companions, and courting couples, taking light refreshments, playing at dominoes, or in pleasant conversation, all so quiet, so orderly, so different from anything like it in London. I contrast this tastefully-decorated place and its well-behaved company, with some of those places in the City-road, near the Eagle, where the people sit in those long, miserable-looking gardens, on nasty, dirty benches, smoking long pipes, and emptying numberless pots of porter, till twelve o'clock, and they are turned out by the potman, to reel and roll their way home as best they can. From thence we go to a large, handsome café, called the Café Delta. We enter a large room, elegantly furnished: it contains fifteen billiard tables; at one end is a raised counter, on which are beautiful flowers; behind are ladies seated, who take the cash; at the sides are tables and stuffed settees, covered in velvet; we have coffee, brandy, and cigars, and sitting at our ease, we watch the company. Here are workmen in blouses playing at billiards with gentlemen in black coats; others are sitting,

with wives and companions, at the tables, taking coffee and playing at dominoes. I notice here the contrast between the workmen of Paris and London. In Paris the workman does not spend his whole evening sitting in a dirty tap-room, leaving his wife and family at home to do the best they can. No! In Paris the workman can enjoy his game of billiards in an elegantly-furnished room, in company with gentlemen of education and refined manners, and his wife can sit in the same place, taking a cup of coffee, play an innocent game of dominoes, or chat with a friend, and then go home sober, none the worse for the evening's entertainment. Here some will say, "A very questionable place of entertainment for a workman and his wife, who ought to be at home, attending to their household duties, or in some better way improving their minds." Let it not be supposed for one moment that I am in favour of all leisure time being spent in unprofitable amusement; I simply wish, in reporting what I have seen here, and in commenting thereon, to draw a comparison between the low, vulgar, and degrading allurements of our London tap-rooms—and to which my class, unfortunately, too often resort—and the more temperate, refined, and therefore more elevating character of the amusements of the same class in Paris. It is now getting late; we have a long walk home; we separate, highly gratified with all we have seen this day, more especially with the company of the gentleman from the Society of Arts, who so kindly gave us an insight into much of French life and manners, and explained so much we wanted to know in so short a time.

My third day in Paris, and I have appointed to meet a party of cabinet and chair makers, upholsterers, &c., to visit several of the largest workshops in Paris. My friend Mr. Lucraft and a guide take the lead, and we start by omnibus to the Bastille. We first visit the firm of Jeauselme, Fils, Godin et Cie., Rue Harlay, 7 and 9 au Marais. This is a remarkable firm: the father of the present proprietor came into Paris in wooden shoes, and only thirty sous in his pocket. After a life of perseverance and industry, he died worth five million francs, was decorated with the Legion of Honour, which we saw, with other gold and silver medals, in a glass case, on entering the show-rooms. After being introduced to the head of the establishment, one of the foremen is appointed to escort us through the vast buildings: we walk through show-room after show-room, in which we see furniture in endless variety of shape, colour, and design. I admired the arrangement of everything. We pass on to the workshops: 1st, the upholstery, where the stuffing is done, and where the women are at work on silk, and damask, and tapestry, making draperies and curtains, &c. We enter the cabinet shops, here I am chiefly interested. I have now learned to raise my hat as I enter the door: I see aged, bald-headed men in spectacles with the young and middle-aged at the bench. I shake them cordially by the hand, and make signs to them that I know what it is to use the saw and the plane, the mallet and the chisel. How I wished we were all of one language, so that we might communicate our thoughts to each other. I notice the cleanliness and good order of everything. Our trade in London is a very dirty business—veneering, glazing, and cleaning off especially—and we wear aprons which, at the end of the week, our

wives say are very dirty. Here I noticed the men wore no aprons, only the blouse, or work in trousers and shirt alone. The clean appearance of men, tools, and benches, were notable. We talk in England a good deal about the dirty foreigners—to my surprise, the whole time I was in Paris, I scarcely ever met with a dirty face, a ragged dress, or bare feet; what a contrast to what we are accustomed to every day in the streets of London. Here I found benches much the same as our own, a slight difference in the shape of tools, but every convenience for facilitating the progress of work; they have more jointing than we have, as the stuff they use in carcass-work is very narrow and hard, whereas we use wide soft pine. In shape-work the wood is cut by machinery as well as by hand, and very close and fine, so that in cleaning off it only requires the scrape and glass-paper to finish. They are evidently so accustomed to the use of the frame-saw (for I noticed no other kind) that they are expert in all kinds of what we call shaped work, and in this I consider they are superior to us. We next visit the carvers. Here we saw the superiority of the French workmen in design and skill; it appeared to me at the time, in noticing all I saw, that these people must be born with a natural taste for all that is graceful and beautiful in nature and art. I saw carvings that seemed to me to be impossible to have been done with tools, but must have grown into shape and form, they were so delicate and chaste: and these men, how gentlemanly in their manners, although in blouses. The foreman, a fine, stout-looking man, in a blouse, so kind, so affable; our guide tells him and them how pleased we are at all we have seen, and how proud to be able to pay them a visit; how happy we should be to meet them in London and do the same by them; that our only object in extending these visits is to promote and encourage kind feelings and generous sympathy and good-will between the two nations, and not only between England and France but all nations, that we may know and feel by practical experience we are all brethren. After this we visited the firm of H. Fourdinot, Rue Amelot, 46. They were not busy, and the men had gone to their *déjeuner*. They have been awarded the gold medal, and it is they who exhibit the beautiful cabinet in the Exhibition, purchased for the South Kensington Museum, at a cost, I hear, of £3,000. We next go to M. Racault et Cie., Rue du Faubourg St. Antoine, 76, another notable firm. Our guide told us that it was chiefly owing to the men in this firm the breaking out of the Revolution in '48: the men were discontented at the high price of bread and the lowness of wages, so they struck work: this caused a commotion, which increased until it became what we all know, "the Revolution of 1848." Before entering this establishment our guide told us he could not go any longer without his dinner, and, as we all felt hungry and fatigued, we adjourn to a "restaurant." It being a first-floor room, facing the street, I have opportunity to notice a good deal from the window, which, by-the-bye, is not a sash, to lift up and down, but a casement, thrown wide open, to admit as much air as possible, and fitted outside with venetian blinds, as all the houses are in Paris. At the end of the street, named the Rue St. Antoine, the great barricade was formed on which the Archbishop lost his life in '48. Our guide here related many incidents connected with that event, which

to us was very interesting. It is a busy street. I note the passers-by; the women with barrows are below, crying fruit, grapes, &c., their heads bound in handkerchiefs, but they are clean, and wear strong shoes, and their clothes, though poor and patched, are not in rags. How strange everything looks to me—porters with their loads in frames on their backs, so constructed as to carry with ease; a woman carrying six feet of bread on her arm; soldiers, on horseback and on foot; how smart they look, and how important, with their hands in their baggy trousers and showy coats; they walk so easy, as though they felt it an honour and not a disgrace to be a military man; priests also, in twos and fours, walking, chatting, laughing, in their peculiar costume, oftentimes carrying their large, curiously-shaped hats in their hands, because of the heat; some carrying bags and baskets; and women, neatly dressed, wearing every variety of the clean, white, starched caps. In this street live a number of workmen who occupy floors and do their work at home. I notice over each floor a sign, with a representation of the trade painted on it, among which are many in my own line. Having recruited our strength, we leave, and enter a large gateway, to see the shops of M. Racault et Cie.; this is a large firm; they usually employ from five to six hundred hands in all the branches, in and out of doors—sixty carvers, cabinet-makers in proportion, about 150 men and women upholsterers. Cabinet-makers I find to be the worst-paid men in France, as at home, averaging four to six francs per day; carvers and upholsterers, six francs; women two and a-half francs. They generally work by the piece, about ten hours per day, but they go earlier to work than us, commencing at six, breakfast eleven, back at twelve, leave about half-past five to dine, when they have done for the day; they have only two regular meals. I do not think they work so hard as we do; they evidently take life easier, appear more gay in manner, and are livelier in their work: there seemed to be more freedom, more equality in manners between men and foremen and their employers. I noticed this difference between the men in the workshops of Paris and London. Here we have foremen and overlookers who wear fine cloth, and decorate their persons with jewellery, and to whom we are expected to look up as to some one very superior to ourselves, because they carry a pen behind their ear, although they oftentimes know no more of the practical part of work than the clothes they wear. In Paris the foreman appeared in the same garb as the men—the blue blouse common to both; each one treated the other with proper respect, as became the office he fulfilled; you were not disgusted with either the pride of the one or the degrading servility of the other; each man knew his place and kept it. Oh! I many times while in Paris blushed for my countrymen! The boys serve three or four years in the trade, and have better advantages for getting an art education than we have. All the schools are open to them where the higher branches are taught, and they are not kept, as our boys, to simply reading, writing, and arithmetic; the art galleries and museums are all open free to them, Sundays and week days, so that they imbibe a taste for art and refined behaviour before they can read or write. I watched two boys, one about twelve years, carving some wood in antique, and was told it was quite common to see them at this kind of work so early. In passing

through the shops in this establishment, we occasionally get a group of workmen around us, when comparisons are made between our tools and theirs, which is interpreted by our guide. We find they prefer Birmingham and Sheffield steel, and we were shown tools from London which they considered superior to their own. As I have remarked before, I consider them more proficient in shaped work, but in preparing, fitting, and finishing carcasses and inside work, drawers and dovetailing, we are decidedly superior; of course, I admit of exceptions. In that branch of cabinet work to which I have been most accustomed, viz., bookcases, wardrobes, &c., what we call carcass work, it is admitted ours is more substantial, better put together, and finished cleaner than the French: our dovetailing and drawer work is much neater as a rule. Our work of this class is mostly straight, plain, and square, with carved work introduced to enrich or add to its expense: this might often be left out without spoiling the design. But in French work of this class, it is generally of such a peculiar shape that the carving introduced could not be abandoned without spoiling the design altogether. I will here remark that I am not an advocate for heavy, massive, clumsy furniture, of which I have seen much in London, and which is supposed to be so very substantial; for I and others have found to our cost, in removing such from house to house, the tearing of flesh, the straining of limbs (even to the breaking sometimes of a blood-vessel), in lifting and carrying; the damaging of walls, the crashing and smashing in loading and unloading, have often made me wish that our furniture was as light, as graceful, and as portable as it is generally manufactured in France. I cannot see the necessity of making a piece of furniture, which requires to be often removed, as strong and as heavy as an iron safe, which, when fixed, is supposed to remain firm for ever. Here I will give the palm to the French for not building immense structures of massive wood, and calling them bookcases, wardrobes, and bedsteads, or cabinets, that require a whole army of porters to remove them when required. I believe our furniture might be made more light and portable, without being weak and trashy, as no doubt much that is made in London for rapid sale is too often proved to be. The workman is too often blamed and censured for bad work, when the fault is in having to use bad, unseasoned material. A man may make a handsome bookcase, or a wardrobe: the carcass shall be put together strong, joints so close as to deceive the naked eye: morticing, tenoning, and dovetailing very fine, that it would appear to have grown together; it goes home, and after a month's wear in a warm room, joints fly, wood cracks and shakes open, tenons get loose, and dovetailing falls to pieces; the customer and employer come down on the poor workman for having made such an abominably bad piece of work, when it is all through the neglect or obstinacy of either foreman or employer in not putting proper material in the workman's hand. I believe a cabinet-maker has more to contend with in this respect than other trades, for if the wood is not well-seasoned and sound, the best workman's toil is labour in vain.

Having left the workshops, and thanked and rewarded our guide for his exertions on our behalf, we separated. I returned to our *logements* completely worn out with going through such vast establishments.

Having a weekly ticket, I paid early visits to the Exposition. I found it less crowded in the mornings, and I had a better opportunity for examining its contents. One day I determined to devote to Gallery III. alone, first visiting the English part, in which I found some fine specimens of British cabinet work. Wright and Mansfield, of Great Portland-street, exhibit an elegant and chaste piece of work they call a cabinet, in satin wood and gold; carving good; a gem. They have been awarded, as they deserve, the gold medal; this excellent piece of work is valued at £1,400. Dyer and Watts, Northampton-street, exhibit a bedroom suite, wardrobe dressing-table, and cheval glass, of pine, stained and grained to imitate satin-wood, inlaid. I should judge this to be the finest specimen of stained wood, as it quite deceives the eye, and is well finished. It has been purchased by the Empress. Jackson and Graham have three cabinets in ebony, inlaid with ivory, £2,000; unequalled specimens, deserving a gold medal. I find they are excluded, on account of forming part of the Jury. Heal and Son deserve special notice for their beautiful bedroom suite, £1,500, satin-wood and gold; hangings of blue silk reps, lined with white silk, gold colour; fringe and trimmings in excellent taste. Hunter, Moorgate-street, bronze medal; wardrobe, dressing-table of inlaid coloured wood, £450. Smees and Son, a very fine dressing-table, satin-wood, £150. Filmer and Son, Berners-street, ottoman in crimson and gold, forms, when separated, two settees and two easy chairs, the design much approved, and purchased by the King of Prussia. Our British exhibitors have a preference for satin-wood and gold; it looks very rich and chaste. In the French department ebony is all the rage, whole suites of bedroom furniture black entirely, but richly carved. Roll, Rue du Faubourg, an ebony bedstead, wardrobe, and cabinet, 22,000 fr. G. Grohe, 4, Avenue Villars, employ 600 hands, chiefly out-doors: an ebony cabinet, brass mountings, £1,000; made for the Empress. A very beautiful cabinet, ebony, 17,000 fr., P. Soumaine, 10, Rue Chaillet. But the richest specimens in cabinets, and the most elegant and graceful design in draperies, are exhibited by H. Fourdinois, Rue Amelot, 46, gold medal. They have the cabinet purchased for the South Kensington Museum, and it is decidedly a perfect gem. The ground is dark wood, and the carving light, but there is this peculiarity in the work, the carving is not planted on, but inlaid, the wood being quite cut through, and, when all glued together, forms one solid mass. This piece of work I consider to be the perfection of cabinet work. Their beautiful bedstead, carved and overlaid with gold, curtains and draperies of rich tapestry, is a masterpiece of upholstery work. While noticing my own particular trade, I wish to draw attention to what I consider a most complete specimen of drawing-room and boudoir decoration, both in cabinet and upholstery work, viz., the Emperor's Pavilion in the Exhibition grounds. The exquisite taste and beautiful design here exhibited cannot be excelled. In hanging draperies and curtains, I consider the French throw us completely in the shade. I have had much to do in fixing cornices, curtains, &c., and have always objected to the English fashion of having curtains a yard longer than to touch the ground. This is a waste of material, most slovenly and dirty

in appearance and wear. Thus, we never can loop our curtains with that graceful and elegant taste in which the French excel. Again, our cornices and draperies seldom correspond, and never look finished or complete. Here we are manifestly deficient in art design, and in this it is that the French workman's taste for art comes into full play. He knows how to arrange and fold his draperies with such elegant taste, to give such graceful sweeps and easy falls, to loop up with proper regard to length and breadth, height and depth, that, when finished, and every part united, it forms one grand whole and complete design. The arrangement of the furniture in the Pavilion is so perfect, a place for everything and everything in its place is here carried out to the letter. After criticising every part most minutely, I came away satisfied that, amidst this splendid array of ottomans and settees, vases, tripods, candelabra, chandeliers, tapestry, and glass, marble, and gold, there was nothing deficient, nothing in excess, that everything was in perfect harmony, and expressed the most exquisite taste. One curious circumstance occurred to me, while going through Gallery VI., where there are exhibited some iron safes. I stood in front of a very large, heavy-looking one, of French manufacture, with a double set of doors, which were open: all the tongues of the locks were visible. I examined every part of the doors, but could see no sign or place for the key. I motioned to the attendant to show me where the key should be put. He smiled, and gave me to understand it was a secret. I thought of the time when I had puzzled some hundreds of persons in the North and West London Industrial Exhibitions, where I exhibited a small cabinet of my own invention, fitted with doors and drawers, and all fastened with one lock. How I placed the key over it, with an inscription, "Here is the key, where is the keyhole?" I am happy to say no one ever discovered where the lock was inserted, neither did they ever find the keyhole. During my repeated visits to the Exposition I went through every gallery, and afterwards passed through nearly every building in the park; also the reserved garden, with its neat walks, its horticultural shows, and aquarium. I then devoted my attention more particularly to the people, their manners, customs, religious observances, and their amusements. I visited numerous churches, which I found open every day. They are wonderful specimens of architectural grandeur and decorative art. I attended high mass on a Sunday morning at the Madeleine, and was much pleased to notice no distinction between rich and poor. Chairs were for the use of all. The poor man in the blouse and the woman in cotton dress and plain cap knelt side by side with broad cloth and velvet and satin and lace. All were kindly treated. I admired their devotion and attention, and, from inquiries I made on the spot of English Catholics, I found that they were most grossly misrepresented by us and our Protestant teachers. I visited the public gardens, where I saw all sorts and conditions of people. The affability, good humour, and respectful demeanour of all classes to each other—so very different to what I am accustomed in London—was my constant theme of admiration. The polite salutation whenever they met and spoke, no matter in what grade of life, high or low. I often asked myself, and others whom I met, where are the Paris roughs? Everyone here seemed not only

smooth, but highly polished. No matter how great the crowd, or what the society, there was nothing to annoy or disturb the most sensitive mind. I visited the theatres. One was the Porte St. Martin. How different the arrangement and conduct of the people to our London theatres. Outside were long wooden barriers, where the people stood waiting quietly to take their tickets. There was no pushing, no shouting. Everyone kept their place quite orderly, and perfectly satisfied with their position, and followed each other like children in a school procession. When we had entered and taken our seats they became our property for the evening, no matter how full the house might be, numbers having to stand to get a view of the stage, as is the case in all crowded houses; there was no grumbling, no calling out, "Hats off," "Sit down in front," every one kept his place and seemed content. If you left your seat and went out a dozen times during the evening no one attempted to occupy it, you always found it waiting for you on your return—another remarkable contrast between them and us, and how different to a Drury-lane or a Sadler's Wells audience. And here I must note I believe the managers of our public places of entertainment are much to blame; they know what dreadful crowding there is if their entertainment is at all attractive; how often have lives and limbs been sacrificed through this evil. Why don't they take pattern by the French, and construct barriers, and so teach the people how to behave themselves; and not only teach them but compel them, by the presence of an officer, to keep order and enter properly, as I found to be the rule in every public building in Paris? I had heard that the French were passionately fond of dancing, so in company with two friends I visited some of their balls. We did not go to the expensive places, such as the Jardin Mabille, or the Chateau des Fleurs, but contented ourselves with those where we should be likely to meet with the workpeople of Paris. At one we paid half a franc admission; at another for the price refreshment was included. A large decorated room, lit with chandeliers, and a raised orchestra for the band, a barrier all round that part devoted to the dance; at the sides, refreshment-tables and seats. Here, certainly, we saw dancing far more exciting than anything seen in a similar place in London; the people seemed to enter into the pleasure of it with a determination to give full action to arms and legs; every variety of movement it was possible to throw the body into was done with a vigour, which, when concluded, made them sit down quite exhausted, until the music recommenced, when they were up and at it again, as though their very lives depended upon it. One was a soldier's ball, but I have never seen soldiers dance like it in England; we saw them do the "can-can," a most expressive if not a very elegant style of dance—but with it all there was perfect order—no one molested or interfered with us during our stay or when we rose to leave, which I don't think would have been the case had it occurred in London. Here, then, we feel the pleasure of being able to go any and everywhere without experiencing insult or annoyance, to which we are so often subject in our own country. What, then, is the cause of all this? Is it the climate, the government, the education, or the good sense of the people?

Having come over to Paris with a determination to make myself as fully acquainted as possible in the time with Parisian life, I rose early,

and got to bed time enough to snatch a few hours' rest : I devoted every day to some fresh pursuit, and so managed not to waste time. I visited nearly all the public buildings and places of interest, mounted the Arc de Triomphe with its 280 steps ; the Tower of St. Jacques, 300 ditto ; the Column Vendôme, 167 ditto ; the Column of July, 230 ditto ; and the Tower of Notre Dame, 390. I took 'bus rides through all the principal boulevards and streets, steam-boat from the Exposition to the Jardin des Plantes ; visiting the gardens, menagerie, and wine-market ; I did not omit looking in at the Morgue, where I saw one dead body, a fine strong-looking man, apparently forty years of age, lying there to be owned : here I did not remain long ; a sickening sensation came over me, so I turned away.

My first Sunday I spent at Versailles, visiting the Palace, with its wonderful picture galleries, its marble columns, gilded cornices, and painted ceilings ; its golden theatre, and beautiful chapel. Then the Park, with its lakes and fountains, its trees and flowers, and statuary, its shady groves, and quiet retreats ; the Trianons, which contain so much of interest, while they recall scenes of joy and regret. Of Versailles and its wonders I can only say, it must be seen to be believed. Its magnificence, so costly, exceeds all I had dreamed of, and words fail me to give anything like an adequate description.

My second Sunday, in the afternoon, I went to St. Cloud ; this was a grand *fête* day : it had commenced on the Sunday previous, and lasted a fortnight. After walking through the beautiful park, from which there is a fine view of Paris, we descended to that part where the *fête* (or fair) was held. I will try to give a description :—Fancy the broad walk in Regent's-park lined each side from end to end with stalls containing every kind of fancy article it is possible to mention ; all sorts of eatables and drinkables, hot and cold (for cooking was going on), and in the centre of this long avenue, a broad open space, filled with shows, roundabouts, swings, and booths in endless variety. There were to be seen, at charges within the reach of all classes, tragedy and comedy, dancing, tumbling, and balancing, feats of legerdemain, and peeps into futurity. In all directions were to be heard the sound of trumpets, the thundering of drums, the beating of gongs, the ringing of bells, and the laughter of the people. Hundreds of every class, from the noble to the peasant, were continually arriving by rail, by omnibus, by boat,—a happy mixture of pleasure-seeking, well-behaved men, women, and children, of every grade in Parisian life. Here, again, were rich and poor, fine cloth, and the everlasting blue blouse, silk, and the white starched cap, soldiers, and priests, and nuns, in their sombre garb, and amidst this crowd of gay, pleasure-loving people, you could move to and fro with the greatest ease, comfort, and good humour, nothing to annoy, irritate, or disgust ; no driving here, or pushing there ; no insult ; no practical jokes ; every one's good sense appeared to me to teach them that they had met to enjoy themselves in their own fashion on their leisure day ; and from experience I say they never once forgot their native politeness and courteous manners, the whole time I spent at this grand *fête*. And this was Sunday, the 15th of September. In my boyhood I have been to English fairs ; in my manhood, with my family, I have visited Crystal

Palace Dramatic *Fêtes*; I have gone to Hampton Court, to Greenwich, at holiday and other times, but never, in all my experience, did I so thoroughly enjoy the society of the people as I did these Parisians on this notable Sunday evening; and why, because every man, woman, and child acted on this principle, that to be happy, and to enjoy life rationally, is to abandon all selfishness, but not self-respect, carrying out to the letter the motto—the greatest happiness to the greatest number. On the grass, beneath the shade of trees, were to be seen old men and matrons, watching groups of young men and maidens, playing at all sorts of innocent and healthful games; some throwing, running, and catching large india-rubber balls, others playing at “touch the wood,” and “touch about;” aged men in the blouse, and their partners in the high-crowned cap, with little baskets of provisions on their arms, were running and laughing, and trying to catch each other, as though they had forgotten their long years of life, and were returned to youth again; some were taking quiet walks down the shady groves, while others were seated enjoying pleasant conversation, and viewing the happy, innocent amusements around; this, I wish to observe, was at a short distance from the excitement of the *fête*, and the din and noise of the shows, which could be heard in the valley below. After wandering through this large park, and admiring the Royal Château (for the Imperial family were staying there, so that we could not enter as on other occasions), we returned to the *fête*, now most brilliantly illuminated with lamps and Chinese lanterns, &c.: we stood in front of a large roundabout, where old and young were riding in cars and on wooden horses, and at an immense speed. I encountered a party from my own country. “What would they say in England?” I remarked. “Well said,” was the reply. “What would they say, indeed! But is there anything to find fault with? Have you seen any riotous conduct, any drunkenness, impudence, any fighting, quarrelling, or indecent behaviour of any kind?” None of us could say we had; and for my own part I had gone into almost every nook and corner of the fair, on purpose to see and judge for myself. It was now dark, the brilliant illuminations and the fine starlight night added to the pleasure and comfort of the scene. We entered a large booth, adorned with coloured lamps, of which there were several, fitted for a ball, paying half-a-franc at the entrance, where there was a retiring room, for leaving hats, mantles, umbrellas, &c. We found ourselves in a prettily-fitted room, large and lofty; the floor was boarded, the walls and roof composed of striped canvas, from which hung flags of all nations. I counted thirty chandeliers. In the centre was a raised orchestra, with full band; at the sides, stuffed ottomans, where we could sit and view the dance, and at the end of the ballroom a refreshment room, where light refreshments were served, as ordinary wine, coffee, and pleasant cooling drinks; nothing intoxicating, nothing to make men worse than beasts, or women to forget their proper position; and this is on Sunday night! Let me contrast this scene with what I have often witnessed in London, and what was to be seen at that same hour. Here were old and young, grave and gay, fathers and mothers, seated, watching their sons and daughters enjoying the quadrille, polka, and the waltz. There was not the least impropriety exhibited, nothing low, vulgar, or

offensive: here, at least, was none of that wild kind of dance we had witnessed at the soldiers' ball: courtesy, politeness, and affability was the rule; and when the dance was over young men led their partners to a seat, or took them to the refreshment room, until the music struck up again, and they re-engaged in this delightful pastime to their heart's content. In London, on that same night and at the same hour, were to be seen some shops closed, and many churches and chapels open, it is true! but monster gin palaces, blazing with gas, and filled with thirsty souls, standing in crowds round the bar, drinking, sweating, roaring, swearing, cursing—aye, and fighting, amid a frightful display of dirt, filth, and misery. Where were the same class of people at this hour in my country who were here enjoying harmless recreation at St. Cloud, five miles from Paris? And what were the attractions offered them to lighten their toil, to improve their health, to renovate their strength, and prepare them for the coming week? Crowded streets they might walk through, but not planted with trees, under which they could sit and rest when tired; great glaring pothouses they might enter, where they could stand at the bar, adding thirst to thirst, and drown care in burning gin, muddy porter, or frothy beer, and listen to what? music? No: swearing and indecent conversation. See dancing? Oh no! but encounter dirty men, and ragged, slovenly women, and shoeless children, spending their last copper, to return home to filth and misery and wretchedness again. Again, if this did not meet their approval, what was their next choice? A London coffee-house. But to sit in a close confined space, so very different to the open cheerful French café, and drink coffee as made at home, and pore over a newspaper or a penny periodical on a Sunday night. How very delightful to a man or woman confined all the week in a dreary workshop! Well, what next? Here are other places,—High Church and Low Church, Methodist and Baptist, Independent and Latter-day Saints, where perhaps you may sleep away your time under some long, drowsy, uninteresting sermon, oftentimes read or spoken in such a peculiar tone, painful to the ear and wearisome to the brain. Or you may listen to loud denunciations against all that is lovely and beautiful in nature and art, being told it is all vanity; or be condemned as hardened wicked sinners fighting against God, and rushing on to eternal damnation! for what? why for not doing just what this or that particular sect may think is the most proper employment for the human soul. Or you may enter a lecture-hall, but not if you value your character. You will be denounced as a freethinker! it may be an infidel! Woe be to the man who should have this stigma attached to his name!

We now return home from the fête; people are gathering at the railway station; they have purchased or won at the lotteries toys for the children; they are blowing whistles, trumpets, or imitating the crowing of cocks, on curious instruments made of shells; they are laughing, chatting, still joyous! not a drunkard is to be seen! And there is no loud noise, nor disagreeable confusion, but the same pleasant, happy excitement; they are evidently satisfied with the day's pleasure, and will be able to say on the morrow that "the evening's amusement will bear the morning's reflection."

Without being too lengthy in my remarks, and wishing to pen only the truth, I am anxious to relate facts, without exaggeration, as they were experienced by me daily while in Paris. I have thought it of more importance to notice the social habits of the people, especially in my own class, than to dwell so much on comparisons in work, of which every man may have a different opinion. I had heard so much in my time of the wickedness, immorality, and dirtiness of the French people, their indifference to decency and moral habits, their irreligion and impiety, and, lastly, their want of freedom, the tyranny exercised over them, and how very thankful I ought to feel, born in England and in a Christian land! that for years I had longed for the opportunity to go and judge for myself. I went, therefore, with a determination to explore, as far as possible in the time allotted me, the habits and customs of this people. I remember one day, while wandering through by myself alone that charming place, the Bois de Boulogne, I accidentally fell in with an English widow lady, who could speak French, and who, like myself, was a stranger there, and I had lost her way. We met a French gentleman, to whom she addressed herself. He kindly offered to escort and show us everything worth seeing in this remarkable forest. They both entered freely into conversation, and the lady kindly interpreted to me. I told her of my visit. She replied that she could see from my appearance and manner that I was a respectable English mechanic, and she would always prefer the company of such to many who were called gentlemen, but who very often were too polite. We conversed on the great contrast between the working class here and at home. How was it that in Paris a workman in his blouse could sit with and enjoy the society even of the upper class who were not ashamed to take wine or coffee with him, or play at a game, in a grand café. In London, I said, there were men of my own class in my own trade, whom I found it impossible to associate with out of the shop: how much more were they separated from the educated and refined. We both agreed that the great fault must be in the training of the people. In our country, unhappily, there is a bigoted set of unenlightened enthusiasts predominant, who exclaim against all kind of innocent amusement. They do not aim at, or endeavour to get rid of, vicious pursuits alone, but they cry out against and condemn all what they call worldly vanities. They do not see that man must have some change to cheer and lighten his toils. Hence harmless recreation is not encouraged, and men fly from the workshop to something exciting, mad-dening, low, and therefore vicious, and which finds greater encouragement from a certain class on account of the money made through it by them, who are chiefly interested in its existence. After enjoying some delightful walks and scenes, and thanking them for their kindness and courtesy, I left. While returning on the omnibus I fell into conversation with a Parisian, also who could speak English. I told him of the pleasure I had experienced in visiting Paris for the first time, and I asked him many questions with regard to my own class, for he also was a mechanic. I found that, taking the average of wage, rent, and living, it was much the same as in London: but then they were not so crowded, their families not so large, and the population not so great in Paris as in London. A workman's home here, which may consist of one room, as,

unfortunately, is the rule in London, is differently managed, and has a neater appearance. The Frenchman's natural taste for art leads him to make the best of outward things. Most chambers, as they are here called, have a recess, in which the bed is placed and concealed with a curtain by day. They cook in stoves instead of fire-places, and burn wood instead of coal. A French workman does not slave at his work : he takes it easy, and does not always expect to have meat and potatoes and pots of beer for his dinner, but often sits down to bread and grapes, with, perhaps, coffee, or wine diluted with water. Of course, the climate is different from ours, and I do not think, as a rule, men could work so hard there as in my own country. Yet, to look at their fine large buildings and wonderful decorations, their statuary, carvings and gildings, massive columns and bronze lamps in the streets and open places, the pulling down and rebuilding, not omitting to mention the grand opera, now building, and nearly as large as St. Paul's, but better situated : the great fountains, at the side of which our squirts in Trafalgar-square would be pigmies ; their triumphal arches, columns, and obelisks : one must confess that there are very hard-working men, even in the gay city of Paris.

Here I wish to offer a few remarks on a most important subject, viz., workmen's dwellings. I am a married man, having a wife and five children, and one of my greatest difficulties in London has been to find a suitable dwelling for my family. How often have I, when, through unforeseen circumstances, compelled to remove from one part of the town to another, walked miles, and inquired at 50 places in a day, where I have seen the usual notice in the window " Apartments furnished," or, a " 1st, 2nd, or 3rd floor to let." On looking in, I have found the place suitable. Then would I be asked, Have you a family ? Yes. How many ? Five. Oh ! dear me, we could not think of taking you with children. And I have been looked at oftentimes by the lady of the house as though I were some monster in human form who dare expect to live in a decent house, and proclaim myself a father of a family. I know that great efforts have been made of late to remedy this state of things : none but the wage class themselves can know—and they do know, this great evil, the want of a decent convenient home, where they can live in peace with their families. The Government of France, or the present Emperor, and to his honour let it be widely circulated, have devoted much time and attention to this subject. I believe his great popularity among the workmen is through his anxious endeavours to improve their moral and social condition, more especially in providing suitable dwellings for the people. The workmen of Paris object, and I think with reason, to the suburban dwellings. First, the distance between workshops and home ; 2nd, the separation from town society and amusements, especially by those who are fond of dramatic entertainments ; 3rd, the unpleasant if not injurious nature of the transit, morning and night, in a jolting hard-seated railway box, as proposed by having cheap travelling between the villages and the towns. Then the wives complain of the distance from the town markets—the shops—where they have the choice of laying out their limited allowance of cash to the best advantage : and both men and wives complain of not being able to meal together except on

the one day—Sunday. There are objections raised against our great model buildings, which they style "caserne," or "barrack," although I perceive that these objections may be overcome by improvements carried out in the construction of these buildings. It seems impossible, in a great populated city as London, where land is so dear, to do otherwise than carry up floor upon floor, as in the "Peabody," "Waterloo," and other buildings already constructed and so eagerly occupied. The workmen of Paris who have associated themselves together with a desire to carry out what they consider the best plan of construction in model buildings, and in which I am pleased to find they have been assisted by the Emperor, have erected a house in the Exposition grounds, and which I had the gratification of examining for myself. I also went through some constructed suitably for small manufacturers, or those workmen who do their work at home. While on this subject I wish to throw out a hint or I may say give some advice, to our railway authorities with regard to the time of running workmen's trains. There are hundreds of workmen in London who, like myself, do not go to the shop till eight in the morning. We work till seven, eight, or nine at night. We breakfast before we leave home or at a coffee-shop on the way. We would prefer, in many instances, to do as other trades who go at six and leave at half-past five, but cannot at present alter these trade arrangements. We get no higher wages—perhaps less than those in the building trade—and cannot afford to pay higher rent or more railway fare. Why can't the companies allow us to travel in a third-class carriage, at reasonable hours, by taking a weekly ticket at the same rate as the very early trains, and then we might be able to take the advantage of living outside the crowded city, to the health and comfort of ourselves and families?

I inquired about the liberties and freedom of the people in France. I was laughed at, and told that in my country we had plenty of liberty to work, and toil, and grumble, and drag up our families as best we could, and have scarcely any recreation: but in France they had no need to grumble, everything was done to make the life of the workman happy, and he was respected and honoured as such. He could visit all the public buildings, gardens, and places of instruction and interest on Sundays and holidays; he could live on cheap fruit, and drink light wholesome wines; take cheap excursions by rail, boat or 'bus, to the many suburban districts, and was not confined to dirty, miserable, unhealthy quarters, as in London, shunned and despised because he is a workman. In Paris all society acknowledged him. He could sit in a clean blouse, in the grandest and gayest café, without meeting with the slightest annoyance or insult, even from an elegant waiter or gentleman patron. "So," said my French companion, "don't laugh at or pity us: we are content to enjoy all the good things we find here for our use, while you in your country are grumbling and working, and craving for those same things (and don't get them), and for about fifteen years have been agitating all over your country simply to get a peep into your picture galleries and museums on a Sunday afternoon. In conclusion," said he, "we have laws, and you and every country have laws, to be obeyed for the benefit of the whole community: if we do what is right, and live in peace and harmony, what more do we want?" But what of

your religion? What does your church teach about all this I see and hear? "Our church," said he, "teaches us to pay our respect our duty, and to offer our worship to God, the giver of all good, and this worship cannot be too high, lofty, or sublime; hence," said he, "as we build palaces and decorate them with paintings and statuary, in honour of our great men, so do we build magnificent temples and decorate them with emblems in honour of Him who is the greatest of all. After we have first devoted ourselves to His worship, and attended to the duties of His holy religion, we feel perfect liberty to enjoy all the good and beautiful in nature and art, of which innocent recreation forms a part."

I twice visited the Gardens of the Tuileries at the time the military bands were playing, surrounded by hundreds of people seated in chairs, similar to what we have had of late in our London parks. Here, also, was the same varied collection and unity of all classes. I expected to meet with in Paris the most outrageous costumes, but was agreeably disappointed. There were plenty of ladies, but not over-dressed. In the streets I never met with such extravagant dressing as I have seen at home. It was evident to me that Paris fashions were only to be seen on paper, in shop windows, and not in the public places; and here, also, sitting and listening to the delightful strains of the excellent band, was the ever-noticeable, by me, blue blouse of the mechanic. Our London workman (myself included) would feel ashamed to go into society unless he could wear a suit similar in appearance to his employer, and flash a little jewellery to correspond, but the Parisian I met with everywhere would be attired in a good pair of black trousers and vest, with a watch in his pocket, over this a clean blouse, and a cap, or "wide-a-wake," evidently proud to own himself one of the wage class. Hence there is not that difficulty with them to keep up a certain appearance, as in our country, where outward show is everything, and manners and good-breeding of very little consequence. I noticed also the children playing in the public places were not so noisy, rude, and rough as ours. Alas! our poor children have not the advantage in this respect the children in Paris possess. It is true we have our parks, but think of the distance they are from the homes of the working population. We have squares in London similar to these public gardens and open places in Paris, and these are mostly within reach, but dare they be seen playing in them? In Paris the children of all classes play in these public places; they will sail their ships on the lakes, in the basins of the fountains, and toss their balls in the air; and the people, the gentleman, the soldier, and the mechanic will play with them; and here are flowers and trees, and music, and the children are so well trained that they do not annoy the visitors, or spoil the walks, or pluck the flowers; and there are no beattles in gold lace to make them fly away in terror, as I have often seen near my own home in London. In these places are all kinds of out-door amusements, and men and women and children seem to enjoy them with much pleasure. "Yes," it will be said, "the French are easily amused and soon gratified." Well, give me the harmless fun of the light-hearted Frenchman in preference to much of the rough, vulgar, out-door practices of my London associates. One evening, going through the Tuileries gardens, I was gratified with a sight that—

amused me, I exclaimed, "Wonders here will never cease." In one of the most public walks a gentleman was standing, surrounded by about 150 small birds; he was feeding them with crumbs. Chirruping and throwing it in the air, they would fly up, catch it in their bills, and sometimes perch on his hand; they did not attempt to fly away, even when I stood close to them! Comment on this is needless; it was evident there was no necessity for the presence of an officer from the Society for the Prevention of Cruelty to Animals.

I visited the Louvre and the Luxembourg, going through the Fine Art galleries and museums. Here there were paintings and sculpture, by the greatest masters and artists of the age in which they lived. Nude figures were here to be seen in every attitude and position that art could devise. The human form was here exhibited in nature's costume alone; drapery was the exception, not the rule. Artists, both male and female, were copying, and painting, and modelling from those naked figures, free to the gaze of the many visitors, who passed to and fro through these wonderful palaces. The Parisian, with his wife, or sweetheart, or children were there, but so different in manner to many of our holiday folks in our museums on an Easter or Whitsun Monday. His taste and love of art lead him to look on only to learn more and admire. I sat where I could watch their countenances as they stood and gazed, but not the slightest trace of a rude smile or indecent gesture. The same opportunity I had of observation in the Fine Art gallery in the Exposition, and the same result. What a lesson for us, who pride ourselves so much on our good breeding. And here let me say, I am not so foolish as to suppose that all is perfection in Paris, and the reverse in London, yet I am bound to assert that we are very far behind in many most important things necessary to us as a civilised nation, and which we ought to be only too happy to learn, when the opportunity is afforded us to do so.

On a certain day I visited the cemetery of Père la Chaise, and here for once was disappointed. I had read a description of it, and its immense cost, and naturally expected to find it unequalled; there were unquestionably fine monuments, an endless variety of little chapels, fitted with all the paraphernalia of the Roman Catholic faith—for the poorest graves were decorated with wreaths of immortelles, little statuary, and flowers and black wooden crosses—but the place was so crowded with all this, that after having seen our beautiful English cemeteries, I could not say I admired this half so much. On my way I met several funerals, and was pleased with the appearance and manner of their carrying out these last offices for those that are gone. The French show at least great taste in their respect for the dead. The open funeral car, with its drapery of black and silver, on which the coffin is placed, the handsome pall with the wreath of immortelles lying on it, the officials in cocked hats, &c., and the little biers with canopy, on which the dead children are carried to their last resting-place. The hanging of black cloth fringed with white over the door of both house and church where the religious service is performed, and the uncovering of the head as the procession passes, all show a feeling of reverence for the dead which I consider must lead to an improvement of the mind.

But now to start from this to something of a very different character, and yet it is a subject which has occupied public attention for some considerable time. What of the social evil in Paris? Of this I cannot speak from experience, only from inquiry. I had opportunities and invitations given me to visit very questionable places, but most respectfully declined the offers: however, I was not backward in getting information. I had particularly noticed in my rambles, often late at night the absence in the public streets of those gay ladies who at certain hours throng the Haymarket, Regent-street, and other places. At night the grand boulevards are crowded with visitors: company of both sexes are to be seen sitting outside the *entées*, but what of the ladies? I could not distinguish them by their manners as in any way approaching to rudeness or the boldness of that particular class. I was told they were to be found at the open-air concerts, the balls, the singing *cafés*: at any rate I never noticed them in the public streets, nor was I accosted at the "witching hour of night," when one would expect most likely to meet them. I was told there were gay places where I might go and take my choice of any number to suit my taste, and spend what time and money I liked in their company without any danger of being insulted, robbed, or contracting any unpleasant consequences from my nocturnal visit. I was informed that they were licensed, and under the control of the governing powers, and that thus disease was prevented, life and property protected, which certainly is very different from the same kind of thing in London. I have often thought on this question, when we read and hear so much about the matter, why do not our moralists urge on the Government to take this evil in hand? We all know that it cannot be annihilated, that it will exist and cannot be prevented. It might be kept within bounds, placed under proper restrictions, as in France, and then we need not be annoyed as we are in passing through our principal thoroughfares, by having those nasty pamphlets thrust in our hands every hour by those who make a trade of, and feed upon, the weakness and follies of mankind.

Amongst some of the most notable places I visited in Paris was an immense building near the Chateau d'Eau. I entered a large gateway, and found myself in an open space laid out as a garden. The extensive building formed a square, with wide flights of stone stairs leading to galleries. On each floor were shops of every kind. Indeed, the trades were here well represented. I purchased some articles, and had a printed receipt. I found this was a new system of business, carried on, I believe, by "Co-operation." On this plan, recently started in Paris, the money invested by the purchaser, after a certain number of years, returns again to his own pocket. So it would seem that, if a man lived to the age of "Methuselah," a certain sum would last him for ever, as he would be only taking it out of one pocket and putting it in the other, and he would have the use and enjoyment of every article that same sum had purchased. This is "co-operation" on a grand scale. What an excellent thing for our working class, if such a system were adopted and carried out in England. I mean, more especially, "co-operation" between the employer and employed, capital and labour united for the general good, so that the toiler may get some share of the golden fruit

his skill has produced, and, in his old age, instead of dying of starvation, when the machine is nearly worn out and become so shaky as to be no longer fit for use, he may not end his days in a "curse house," but be able, as in the long-looked-for and promised "millennium," to "sit under his own vine and fig-tree, none daring to make him afraid."

There is an agitation going on just now in London for good, cheap, respectable dining halls. I visited several in Paris, only to be astonished, and to admire the manner in which they were conducted. M. Duval, the proprietor, has a number of elegant cafés, called "Établissements de bon-ton," fittings like a palace, light, cheerful, and airy. I did not detect any worse smell than that of fruit and flowers, so common in all the cafés and restaurants. Neat, modest-looking young women waited on you, presenting you with a clean napkin, nicely folded; then came first, "bouillon, or vermicelli potage," next "veau," or "mouton," or "boeuf" rots, with "pomme de terre," or "légumes" and a "demi-bouteille de vin ordinaire," or a "vin le carafon;" in plain English, you could have soup, bread, roast veal, mutton, or beef, and vegetables, with a tumbler or half a bottle of ordinary wine. You could dine in state, and fancy yourself a lord, for one shilling! M. Duval's butcher's shop, near the Madeleine—for he kills his own meat, and it is of the best, beef, mutton, and veal (not horse flesh)—is fitted up in the most artistic manner, that only a Frenchman can devise. A fine massive stone building. Over the large and extensive shop front is a cornice, carved and ornamented with heads of oxen in gold, emblematical of the business carried on beneath. The shop floor is of inlaid coloured marble; walls, counters, and window slabs of white marble: carving and gold everywhere. In the centre of the shop a marble vase, nine feet in circumference, containing an immense pyramid of flowers. A gent, seated at a marble desk, presented you with a billet, on which was printed the article and the price. Handsome young butchers, with neat black moustaches, and in clean white aprons and sleeves, and who, if in London, would be the admiration of all the lady "helps" in the neighbourhood, waited on the customers. Ladies behind the counters added grace and beauty to the scene. Outside were a number of light, handsome carts, to convey the meat way to every part of the city. In every one of M. Duval's establishments, I noticed especially the cleanliness and well-ordered taste. Good management appeared to be most successful in its result.

One great deficiency in Paris is the want of good sewerage. However, every street appears remarkably clean, a good supply of water being conveyed through pipes and hose, to cleanse and purify roads, trees, and flowers. Men are constantly employed sweeping, cleansing, cleaning, and carting away everything of an obnoxious character. There is a good supply also of what in London we are very deficient in, viz., public conveniences, urinals and water-closets in nearly every street, the former in greater number on the boulevards, where they are most required, on account of the number of passers-by to and fro: the latter are to be met with very often, and there is no difficulty in finding them. A large notice is generally placed over the entrance, announcing that "cabinets particuliers" can be had for (15c.) 1½d. Why have we not these conveniences in London? It could be done at a cheaper rate, we having

sewerage; there would not be the expense and trouble connected with them as in Paris. I am aware that our people are very sensitive on this matter, so much so that many persons would be shocked at the idea of a public water-closet; and they would rather suffer all the ills attending the want of such, than agitate in favour of a convenience so necessary to public health. Oh! it is often said, the French have no modesty, they don't care what they do. I reply, English people have a good deal of mock modesty; they try to blush, and put up their hands, and pretend to hide their faces, when certain questions of public importance are mooted, but in the carrying out of correct principles and proper modes of action I am sorry to say that, in many instances, they are far behind in practising the good sense exhibited by the people of France. It may be amusing for me here to relate an anecdote of an adventure I heard while in Paris, of an English gentleman, who was staying at an hotel, and did not like the construction of the French water-closet. After some time he found one at the end of the Rue de Rivoli more to his satisfaction, and which he fully intended to patronise during his stay in the gay capital, so returning home one evening on the omnibus which stopped at the Rue de Rivoli, for he was in haste to pay a visit to the aforesaid water-closet, after alighting, and thinking "I am all right, I know my way," he started and ran! On, on, he goes, two miles and a-half he ran, for, alas! he had got down at the wrong end of the Rue de Rivoli. Englishmen meet with curious mishaps in Paris, as well as Frenchmen in London. Whatever difficulty I met with, or however strange and novel things appeared to me, I always met with civility, politeness, and kindness, wherever I went, and in no matter what society, which, unfortunately, cannot be said of my countrymen in London. How often had I to show them my map, and by signs to make them understand I wanted such and such a place, or that I had lost my way, and what trouble they took to put me right. I was never once misdirected. In London, I have oftentimes met strangers in the streets, who, when wanting to go to Paddington, have been sent to London-bridge. I am afraid it will take us a long time to learn to carry out the maxim, "Do unto others as we wish them to do unto us."

There is another question at present agitating society, and in which our class is deeply involved, viz., trade societies. I have never yet belonged to one, therefore cannot speak personally with regard to them. I am a member of the "Hearts of Oak Benefit Society," an institution for securing to its members provision in sickness, lyings-in, losses by fire, and the expense of a funeral. I find from inquiries that trade societies do not exist in France, at least not in the sense of our London trades unions. The principle, I believe, on which trade matters is conducted, is to pay each man according to his worth and the state of trade in the market. The laws of France are very strict in this matter, and punish every attempt at coercion, either by insult, or violence, or intimidation. There must not be any violation of the liberties of trade or labour. I am not prejudiced against trade or any other societies conducted on sound principles, and in which justice, freedom, and truth can be established and carried out between man and man. I know from experience that "Union is strength," for how could tyranny or injustice of

any sort be grappled with and overcome but by the united efforts of those who are suffering under bondage? But all unions are not for the general good, and have so proved to the cost of many. For my own part, I prefer individual liberty to act for my own benefit, as well as for humanity, of whom I form a part. My motto is, "The greatest happiness for the greatest number," and therefore, in endeavouring to make myself and those around me happy, I am contributing to the general good and happiness of all.

And now, as I am drawing to the close of my report, I wish to state that I am not a member of the "Sunday League," "Reform League," or any other league, but stand alone and independent, and therefore am not a representative or advocate for any particular sect or body of people. In my youth I was trained religiously, by a kind and devoted mother—was a Sunday scholar and teacher, afterwards a member of a Christian congregation. Some years since I separated myself from all religious sects, on conscientious grounds, being determined to think, to act, and work for myself, in my own way; allowing full liberty to everyone else, I wish to exercise the same myself. I believe that in all countries, among all peoples, and in all religions, is to be found somewhat of the good, the beautiful, and the true: that "God hath made of one blood all the nations that dwell on the earth," and that there is "a time to work and time to play, a time to sing and a time to dance." As the wise man hath said, "a time for everything." I have said that all is not perfection in Paris. I am not an advocate for Sunday labour, and would have liked to have seen all places where work might cease closed on that day for rest and recreation. Necessary labour for some must always accompany necessary recreation; but then, as I have always asserted, those who have to labour to give pleasure to the thousands who have only that day to recreate themselves, could always, if properly managed, have their rest on some other day of the week.

It will appear to some minds that I am very much in love with the manners and customs of the French. I have endeavoured to speak of things as I found them, without prejudice or exaggeration. Many persons have gone to Paris and returned with the impression that everything there was wrong, and, if all at home was not quite right, at least they were better than their neighbours. But did they thoroughly examine and make proper inquiry? Did they look at things from a French point of view, setting aside their English prejudices, misrepresentations, and untruthful exaggerations? Then, perhaps, many go over with strict Protestant notions, and then everything seen or done in a Catholic country would be very shocking to their puritanical minds, for, unhappily, we have so many religious prejudices to contend with. They may be conscientious convictions, earnestly advocated, but it must be well known by every impartial and unfettered mind, who has ever given any thought to this matter, that when more religious liberty and more freedom of thought has been advocated by men far in advance of the age, they have been denounced and condemned by our preachers and teachers, and we, the working class of Great Britain, have always had France shown us as some fearful monster, not as a pattern for us to copy, but the reverse. Horrible representations have been invented, and diabolical doings have

been placed before us of what we should come to if we took for a model our neighbours across the Channel. Paris has been held up to view as a shocking picture, something dreadful to be shunned, and, finally, an awful warning to the unenlightened, uninstructed, and inexperienced workpeople of England!

In contrasting the habits and customs of my countrymen with the French people, I may have criticised them severely but not untruthfully. I am not unmindful of the gigantic efforts my class have made in the last few years to improve themselves and their condition, neither have I forgotten our industrial, provident, and co-operative societies, workmen's clubs, institutes, and lecture-halls. I know there are hundreds of intelligent, sober-minded toilers, who are neither drunkards nor teetotallers, neither fanatical bigots nor blaspheming infidels, but rational, temperate, thoughtful, and refined, practical experimentalists. We know how to suffer and to bear the hardships of our position, which the theorist whose bread is buttered for him can never understand.

I have noticed more particularly the conduct of the people of Paris in their public character. If they know so well how to behave in society, I cannot conceive but that in private it must be much the same. The question naturally arises, what is the cause of this marked difference between us and them? We want in our country a system of "national education," free from all sectarianism, and entirely secular, leaving everyone to exercise his own judgment in religion, and to worship God according to his own conscience. Let us have free access Sundays and week-days, to all the national institutions. Let there be no restraint put on rational, healthful, innocent recreation, and let us have this always encouraged. Let Government restrictions be put upon, and strongly enforced against, every thing and every place of a vicious, low, or degrading nature. On Sunday, our leisure day, let us have not only churches and chapels open free to all, and without respect of persons, but let us have lecture halls as freely open, where we can be educated in the arts and sciences, the history of men and nations, and the wonders of creation; where the mind can be elevated, improved, refined; where we can learn how to train our children in knowledge and wisdom, and teach ourselves how to behave in a becoming manner to each other, and where we might practice affability, courtesy, and polite conversation. And afterwards when the nation has been properly schooled and trained, I would add music and dancing, and dramatic entertainments, which, when properly conducted, are of an elevating and refining nature; and as there are always to be found some who cannot be restrained from indulging in rough, vulgar, unmanly conduct and conversation, to the annoyance of the more peaceable, I would have, as in France, the presence of Government officials in all public places, who should enforce well-ordered conduct and proper behaviour for the benefit of the whole community. I have advocated perhaps warmly the Parisian mode of observing the first day of the week; for some years I have been in favour of a "free Sunday." I cannot conceive why those who oppose recreation on that day, and wish to promote a strict observance of what they call the Sabbath, do not see the tyranny, injustice, and utter absence of all Christian and benevolent principles, in preventing us, who are confined

the whole week in a workshop, labouring for the benefit, comfort, and luxury of the wealthier class, and have no other opportunity, except by evening hours, from visiting the national institutions, which those who have leisure and little care have every opportunity of enjoying. What right have they to claim the opening of their own places on that day, and dare to keep closed those we wish to enter? We have never wished to prevent them enjoying the rights and privileges of their own places of meeting. If ours were open to us we should not compel them to close. Everyone would have perfect liberty to go to his church or chapel, his meeting or lecture hall, and to visit, if so disposed, a picture gallery, a museum, a menagerie, or a public garden. We claim the right, as in France; and I believe that it will not be long ere we shall enjoy the pleasure of it.

In closing my report I have only been able to glance at the many phases of Parisian life and manners, and I beg respectfully to remark that I am but a novice in writing of such matters, this being the first time in my life I ever attempted to write a report of any kind; therefore I know I have made many grammatical blunders, misplaced and misspelt words, but I have endeavoured to represent the truth naked and bare, and without reserve. I may please some and offend others. I cannot help this, nor do I regret what I have done. I am satisfied at having wished well, and done my best to remove some of the prejudices against the French people. I have pointed out my own errors with that of my country, that they may accept the good and reject the evil. My visit to Paris was a long-looked-for anxious wish, and my ambition was to be able to say that I have been and judged for myself. I have known little else than toil from my boyhood, working at a bench not less than ten hours per day, in a dismal, dirty, unhealthy workshop (the last one especially so); but through the kind exertions of yourselves, gentlemen, I have enjoyed the first and only fortnight's holiday I ever had in my life. This was the first time I ever crossed the sea. I have returned wonderfully changed in mind and manners with regard to men, women, and children in Paris, their habits, customs, and religion. I shall now be able to contradict much that is said untruthfully of them in this country, and from personal experience be able to state what I have really seen and witnessed, and explain what I have been determined to inquire into without fear, or reserve, or contradiction.

CERAMIC DECORATION.

By AARON GREEN,

PORCELAIN DECORATOR.

HAVING been selected as one of the artisans appointed to visit and report upon the Paris Exhibition, and having availed myself of the opportunity so kindly afforded me, I feel it a duty incumbent upon me to report to you the impressions made upon my mind after a careful examination of the wonderful productions there congregated.

I, of course, confine my observations to the ceramic department of that great gathering, and in direct reference to the decorative branch of that beautiful and useful division of human industry.

Disclaiming all pretension to learning, I write, as a working man, on the executive or manipulative part of decoration only, leaving schools and styles of art to be treated by writers of far higher attainments.

I shall begin with France, as both courtesy and justice demand I should, and, as a matter of course, taking the royal manufactory first. The Sèvres court is a very large and important one: the walls are covered with large and splendid specimens of Gobelins tapestry, which give a rich and imposing appearance to the whole court. English porcelain decorators are sure to be immediately attracted to the examination and study of what to them is comparatively a new method of decoration, but largely patronized at this establishment, viz., painting in clay, in a state of what is technically called "slip," on the raw or unfired coloured body of the article, generally of celadon, sage green, or stone colour, the objects mostly represented being flowers, birds, flies, grass, &c., usually with a freedom, truth, and grace most refreshing to behold, some parts of the decoration standing out in such bold relief as to require the aid of the modelling tool in addition to the painter's brush. The best productions in this mode of painting are those by Mr. Gély, Mr. Teyre, and Mr. Salom. The delineation of flowers and foliage is wonderfully true to nature, and the dexterity with which the difficult medium has been handled cannot be too highly praised. The figure decorations in this method are not so satisfactory, and are such as will not add to the reputation of Sèvres. The birds, although to some extent liable to the same objection as the figures, viz., flatness, have, nevertheless, a certain charm and elegance from the manner in which they are introduced. In all cases I prefer those specimens where little or no colour has been used.

The free use of colour has, in my opinion, given a meretricious appearance to many otherwise pure and tasteful objects. Taken altogether, the feeling produced upon me by this branch of decoration was one of disappointment. The sensation which it has been reported to have created, as well as the recollection of what was shown in the London Exhibition of 1862, had prepared me to see greater progress made in the art than what has really been achieved. And I am of opinion that this mode will not supersede flat painting, especially in articles of strict utility. For, although it will possess an immunity from the corrosive influence of the acids, it will be more liable, from its surface being uneven, to injury from chippings and scratchings, and also will be more difficult to keep clean.

In painting proper, either of figure, landscape, or flowers, the latter especially, this establishment is not equal to its former power. An exception must be made in the case of Van Marke, whose landscapes with figures and cattle, painted on four large vases, two of turquoise and two of bleu-de-roi, are genuine triumphs of porcelain painting. Although somewhat low in scale, there is a rich glowing mellowness and depth in his colouring which is most harmonious and pleasing to the eye. This, united to good drawing and superb manipulation, renders Van Marke one of the greatest porcelain painters of the present day. It is matter of regret that the ceramic art should lose so able an exponent, for I am informed he is adopting entirely the painting of pictures in oil. There are six or seven large vases with classical figure subjects, painted by Mlle. Bataille, which have an intensification of sweetness and tenderness of touch, manner, and colour that is truly wonderful. Scarcely less beautiful are the figures of Mlle. Durant. And great praise must also be given to M^{me}. de Cool, for a fine painting of the Madonna and Child, executed on a blue vase. Mr. Fragonard shows some very good paintings, especially a pair of vases painted all round with subjects after Watteau. They are vigorous in manner, fresh in colour, and altogether effective, but somewhat lacking in refinement of handling.

With the productions of Mr. A. Schilt I was rather disappointed, for, while they are generally good, they are not uniformly so. On the same piece the figures will sometimes be good and parts of the landscape rotten and uncertain, and in other instances we shall have delightful passages of landscape marred by badly-painted figures. But they are all delicately and elaborately worked out. They would, however (if I may say it without presumption), have been better if greater freshness of tint had been preserved, and a more vigorous and powerful style adopted, so as to have rescued them from the sickly, maudlin, sentimental look they have at present. Two large blue vases will attract attention. They are painted by Mr. Cabau, with a frieze of cupids and fawns in a cool opia tint, on a pale turquoise-coloured sky, which gradually deepens into dark blue as it approaches the top of the vase—in my opinion more novel than beautiful in its effect.

The flower painting shown by Sèvres is small in quantity and inferior in quality, the most noticeable being a pair of Indian jars, painted with an artistic arrangement of poppies, very freely and finely done. There is a pair of large vases, about the centre of the court, with flowers and foliage

conventionally treated, the leaves being coloured in blue, but the flowers are painted after more natural types than the leaves, the whole entwining the vase in a most graceful manner. Both flowers and leaves are dashed and heightened with gold, and altogether a successful and highly decorative result is obtained.

The use of ormolu is a very marked feature in nearly all vases of foreign manufacture, by which means many of the difficulties of their production in china are avoided, and the effect of lightness often realised, which it would be impossible to obtain by the use of porcelain itself. This circumstance should always be taken into consideration when a comparison is made with the English vases, in which none of the potters' difficulties are evaded, but, on the contrary, are boldly and conscientiously met, and if possible conquered. The smaller and commercial articles shown by Sèvres are not at all such as might have been expected. Two or three déjeuner services, delicately painted by Mr. Langlois with landscape and ornament, are of a very decorative character. Of the dessert and tea ware exhibited nothing flattering can be said; some are decidedly bad, and scarcely any of them of first-rate merit, either in painting, gilding, or design. Indeed, if Sèvres depended upon these articles for fame, her reputation would be gone.

The Limoges enamels shown seem to be very good and effective, but they are placed at such a distance from the eye that it is impossible to judge correctly of their merit.

Utzneider and Co. make a very good display. The visitors' attention will soon be arrested by four large jars, painted in the most dashing manner by Mr. G. Leonce. It is a new and novel style of decoration, the piece being covered from top to bottom with tropical vegetation and birds; the colour is strong, the freedom excessive, many of the objects being represented by a few rapid sweeps of the brush, but the result is highly satisfactory; and there seems to be a host of imitators, for you meet with this sort of thing at almost every turn, but the quality generally is much inferior to those just noticed. Four large *scenx* and stands, painted by A. Sabourin with nymphs and cupids, in landscape, after the manner of Boucher, are very well drawn and beautifully painted. Another pair, with old street-architecture (something after the manner of our own Prout), are excellently painted by P. Langlois: the scale of colour is very sober and suitable to the subjects. Two vases, with green ground, and similar subjects, by the same artist, are equally good. Another pair, with open landscape, though clever, are not so good as those just mentioned. There are numerous other works by this artist, mostly in monochrome: all of them are good, but none of them are highly finished. Two *scenx* in crimson, with landscapes and horses, by Edward Lambert, are very effective and artistic in their treatment, with perhaps a too free use of the pen and too little of the pencil in their execution.

On the stall of M. Raingo are three or four pictures by M. Bonquet, and other examples of this artist may be found in several of the French courts, painted on the raw enamel, a very difficult process indeed, requiring the greatest skill in the artist to be successful; and the result shown in these specimens is very great, being, without doubt, the most

successful productions in that method shown in the Exhibition, making as they do very effective and artistic pictures.

Pannier-Lahoche and Co. exhibit, among many other meritorious things, a rich easel, with porcelain slabs, the paintings representing the "Triumph of Galatea," very neatly done, and of good colour. There are likewise two small vases with enamel mountings, the figures and cattle being very well done. A pair of large jars, with decoration after the manner of Leance, by W. Mussil, but much more carefully done, are deserving of great praise. There are numerous dessert plates shown by this firm, of good design and workmanship. A series of them have painted figure subjects covering the centres of the plates; these are somewhat marred by the snuffy and foxy tone of the colouring.

C. H. Pélissier and Co. exhibit numerous specimens of the clay painting, but, as is usual in this style of decoration, the best specimens are those executed in one colour. There is on this stall a nice table service, pale green ground, with a well-designed pattern printed in gold. Another, with coronet and monogram, in gold and red, is likewise very good. In the centre of some of the dessert plates there are good specimens of fruit and flower painting.

Faugeron and Dupuis show four bottles, painted by Leonce, two of which have been purchased for the South Kensington Museum, and they are very good specimens of this painted style; like all his works they are firmly and boldly painted with cactus and tropical plants. Upon this stand will be found some very pretty tea-cups and saucers, executed with neatness and care.

Haviland and Co. produce some very good plates of various patterns. All of them are good, the gilding especially so; indeed, in that branch of decoration most of the French firms show works which greatly surpass the productions of the Royal manufactory.

Machereau shows a well painted landscape on plate, with a turquoise ground. The gilding and chasing are very fine, and the works on this stall are generally very good.

François Alluand, aîné, exhibits very nice dessert and tea patterns, in pale green and blue, interspersed with very light and elegant gilding. The same remarks apply to the shows of Jacquiel, Prevost, and Jullien. The greater part, however, of the gilding exhibited by the latter is not done by hand, but is printed.

Lebourg exhibits very numerous and good reproductions of the shapes and decorations of the Chinese and Japanese.

Duck exhibits some magnificent majolica ware; this is a name which has been applied to the Italian manufacture of coloured earthenware of the 17th and 18th centuries. The examples shown by this house are as fine in their class as anything in the Exhibition.

On the stall of Barbizet, and on that of Avisseau, there are numerous specimens of Palissy ware, with modelled decorations, representing fish, reptiles, lizards, and insects, a taste for which was inaugurated by Bernard Palissy, in the sixteenth century, being himself at the time employed in this, the colouring of whose peculiar works are wonderfully imitated in the specimens here exhibited, evincing a high perceptive power in the artists who have produced them.

I now proceed to the examination of the German courts, beginning with the Royal manufactory of Berlin. The situation of these stalls in the Exhibition is a fine and commanding one, in the centre of one of the avenues; but the show is very disappointing, there being very little that is really excellent. The most noticeable objects are the large vases, some of them of elegant and graceful form, but, like those of France, they are all built up in ormolu mountings, a graceful mode of avoiding the potter's difficulties. A very large vase, of elegant form and proportions, in bisque, is decorated with figures representing the vintage, painted in a cool neutral tint, that is nicely in harmony with the colour of the bisque body. The drawing is, in parts, very faulty, and the general execution not of the highest order. There are two reductions of this vase, likewise in the bisque: one is painted with the Madonna and Child, surrounded by a wreath of gold foliage, the chasing of which is extremely well done. The other vase has Vulcan, Mars, and Venus, in monochrome of a mauve tint; this colour is carried into the gold ornamentation in a very pleasing manner. Another vase, of the same shape, but glazed, is painted with a portrait in medallion, very sweetly done; the gilt laurel wreath is well executed, the chasing being very fine indeed. There is another large vase, with female seated in a landscape frieze: the colour of the latter, although rather brown and sombre, is nevertheless good, and is painted throughout in a thoroughly conscientious manner. The majolica paintings on this stall have a rather attractive look at first, but will not bear examination. The same remarks apply to the figures, groups painted in a cool sepia tint, on bisque of a purplish grey ground. There are on this stall a goodly number of large vases, bottles, fish dishes, &c., which, in shape and decoration, are excellent imitations of China and Japan.

I was greatly disappointed with the productions exhibited on these stalls: knowing the great reputation of the German porcelain painters, I had expected a better display. This exhibition is certainly not creditable to Prussia.

The exhibition made by the royal manufactory of Meissen, Saxony, is much superior to the last described, displaying greater ability and care than its neighbour. The most important piece, in point of size and pretension, is a large vase decorated with the story of Diana and Actæon, painted in monochrome of a sepia tint, by Muller; it is a very ambitious work, but I think it is a great failure. The drawing is faulty, and the style and execution dry and hard in the extreme. Two large vases, with painted frieze of allegorical figures, representing the "Toilette of Venus," are executed in a careful and tender manner, and show great manipulative skill in the artist. The scale of colour, however, is not pleasing, a sickly combination of green, blue, and orange greatly predominating. Three large Indian-shaped jars are beautifully decorated with groups of pendant roses, very finely yet freely painted; the foliage is exceedingly well done. These are decidedly the best specimens of flower painting exhibited by the Germans, and equal to anything shown by the French. The Limoges enamels, of which there are numerous examples, are some of them very important, both in size and character of ornament. The designs are very good, and the execution (notwith-

standing the hard, dry manner) is very skilful; the enamel is remarkably free from partings or sponginess of surface; the result is therefore satisfactory. In the exhibition of this speciality this court is conspicuous, and the display made is highly creditable. Two tables, with figures and gold ornamentation, will be admired by those who examine them. There is, however, a goodly quantity of things exhibited here which ought never to have been sent, as they cannot in any way enhance the reputation of the manufactory.

De Maurice Fischer shows some reproductions of old Sèvres, very indifferently done, and likewise some imitations of the works of China and Japan, very well executed, but they have evidently not been copied from the best examples.

Fischer and Mieg exhibit two large vases, crimson ground, the figure subjects on which are pretty well painted, but hard and very cold in colour. The flower painting on this stall has a very weak and sickly appearance, seeming half washed out.

C. Fleisch and Co. exhibit some tea patterns, tasteful in design and well executed, the gilding especially being very neatly done.

Villeroy and Boch show some rather successful specimens of the application of photographic printing to ceramic decoration. After carefully reviewing the porcelain productions of Germany, I think it will be generally admitted that they have not kept pace with England and France, or even sustained their former power. And this is matter of regret, possessing, as they do, artists who are capable of executing much finer works than any which Germany has sent to the present exhibition. And the patterns on the ordinary articles of commerce exhibit a poverty of design or original thought, with a reliance on the past, that is not in consonance with the spirit of the age in which we live.

We now come to the consideration of the English department, of course commencing with Minton and Co., whose exhibition is an honour to the country, and one which must fill every Englishman with a feeling of satisfaction almost amounting to pride. First in importance, from their size, form, colour, material, and decoration, are a pair of vases in royal blue, perhaps one of the finest colours in the Exhibition. The figure paintings representing the birth and toilette of Venus, after Boucher, are by Mr. Allen. They are freely yet carefully painted; the colouring is very good, but looks a little weak or over-fired, the local colour of the flesh being scarcely strong enough. The landscapes (likewise after Boucher) are by Mr. Mitchell; they are excellently well painted; but, in my opinion, both of these artists are seen to still greater advantage in their combined painting on the pair of Italian vases in the same glass case, a landscape frieze with children at play; the pearly grey of the former is in capital keeping with the ripe flesh of the cupids. The honour these two art-workmen have rendered to English porcelain painting is deserving of high commendation. There are numerous other works by these artists that will be viewed with pleasure. By Mr. Allen is a large majolica vase, of fine form, decorated with paintings of the "Boar Hunt," after Rubens, rich in colour and vigorous in touch. The landscapes, of which there are numerous examples, covering the centre of dessert-plates, are by Mr. Mitchell, and are among the best things of

the kind in the Exhibition. Three vases, one of very large size, with subjects after Watteau, are painted by Mr. Jahn. The delicacy and sweetness of touch exhibited in these paintings is of the highest order: the drawing is extremely good, and the colour rich and harmonious. (By the way, some writers have lately been trying to write down the taste which prompts the frequent recourse to the works of Watteau and Boucher, by our china painters. Would it not be better if these writers would direct attention to two other painters whose works are as capable of adaptation to the requirements of ceramic decoration as those of Boucher and Watteau?) Not less beautiful are two smaller vases in celadon body, with white bas-relief ornamentation. The frieze, in monochrome, emblematic of the vintage and the harvest, is finely painted, evincing in the artist great refinement of feeling and tenderness of touch. But, perhaps, the best work by Mr. Jahn will be found on the two small vases, with pictures after Boucher, representing music and painting. There is some meritorious work by Mr. Henk, in trophies, cameos, birds, and general decoration. A beautiful ewer and stand, with figure paintings after Salvator Rosa, by Mr. Rischgriz, is very masterly in execution. These have been purchased by the King of Prussia (evinced the good taste of his Majesty). Some egg-shell cups and saucers, with landscape and cattle by the same artist, are very clever productions. A pair of large Indian bottles, decorated by Mr. T. Simpson, with an artistic arrangement of various white flowers, are exceedingly well painted, and very true to nature in drawing and colour. The decoration on the ribbon handles of these two jars has been very carefully and skilfully done. I would direct attention to a series of wild-flowers, painted on dessert-plates by the last-named artist, as deserving of great praise.

Of the Limoges enamels exhibited by this firm I can speak in the highest terms of praise. They are clear, soft, and bright. The two small vases in this method are splendid productions, both in design and execution. There is nothing better in this speciality in the Exhibition, with the exception of those lent by collectors: they are the work of Mr. Slater.

There are numerous good examples of painting in fish, birds, flowers, &c., which space will not permit me further to notice. The gilding and chasing of the vases mentioned above are of the highest order, by Mast and Simpson. The dessert and tea patterns exhibited by this firm excel the productions of any other manufactory.

Copeland and Sons make a grand display, and their works, generally, are of great excellence. There is, however, an almost entire absence of figure-painting. Their greatest strength is shown in the fruit and flower painting, of which there are abundant and splendid specimens, conspicuous among which is a large vase, with flowers, finely grouped and painted by Mr. Hurten: it is very rich and powerful in colour, but, if I may venture to indicate a fault, it is that the shadows in the foliage are too black. The colours are very dry on the surface, giving an appearance of hardness, which is not the fault of the painter, but of the glaze. The raised gilding and chasing of this vase, executed on a pale-green ground, is very good. Three other vases, in turquoise ground, with wreath and pendant groups of flowers, are beautifully painted; but,

In my opinion, this artist's best works are to be seen in his paintings of fruit, such, for instance, as the large wine-cellar and vases, in blue enamel, with goat's-head handles. The grapes upon the former are exquisitely done—soft, unripened, and ripe. The same remarks are due to the painting of a couple of ewers, decorated with wreaths of the chinam, being very masterly indeed. The gilding generally on this man is very well executed, with, perhaps, a tendency to over-richness of ornament, and a too free use of the precious metal. Two tazzas, decorated with Indian ornament, are very good; one of them is sold to the King of the Belgians. There are vases and bottles decorated with the same style of ornament, having an exceedingly rich oriental character. The specimens of Limoges enamel exhibited by this firm are not at all satisfactory. The enamel is cloudy, and rough on the surface, and the method of handling is dry and hard. Taken as a whole, the exhibition by this firm is of the highest order, deserving of great commendation, and confers much honour upon the country.

Turn we now to Wedgwood and Sons. This is decidedly the most remarkable name in the whole history of ceramic art in England; and in this great special production—the Japan-ware—they are still unapproachable; indeed, in this they are unique. The specimens exhibited here are of exceeding beauty, and cannot be over-praised. In more modern commercial articles they have a good show, of table and toilet-ware in particular. The patterns are generally well designed; some of them are well engraved, and most of them are coloured with judgment and taste. They have likewise a great pictorial display in the works by Mr. Lessore, a French artist employed by them; and if numerous examples constitute strength, then Mr. Lessore is strong indeed. The Exhibition correspondent of the *Telegraph*, in one of his reports in the earlier part of the season, when noticing the works of this artist, remarks that our Royal Academicians would do well to study and imitate his drawing. Surely the writer must not have been serious, for decidedly drawing is Lessore's weakest point: he is too hasty and careless in his method to admit of good drawing; but there is always a charm in his colouring that is sometimes positively captivating in its influence, and very suggestive of the old masters; but I am of opinion that he appears to greater advantage in the former Exhibition. It would have been better for his fame if half the articles exhibited here had been left at home; for, assuredly, such mere vagaries as some of these really are, cannot add to the reputation either of himself or the manufacturer who employs him. The toilet-ware decoration of G. Jones, of Stoke-upon-Trent, and table-ware patterns of Pinder, Bourne, and Co., of Burslem, are very creditable to them.

Having concluded my examination of the Exhibition, I paid a visit to Sevres, and to the Royal manufactory there, which is situated in a healthy, beautiful, and romantic spot. This manufactory was purchased, with the sole proprietorship, by Louis XV. in 1763, and from that time to the present day Sevres has retained its reputation. Government, even during the troublesome times of the republic, endowed it, and it is still in the receipt of something like twenty thousand pounds annually from the purse of the Emperor. Thus the directors have been enabled to

secure the services of artists of the greatest ability to design and decorate its productions. The show-rooms and museum at Sèvres are, perhaps, the greatest treat which a porcelain painter could be favoured with: there he can see specimens of every country and style; and they are not mere specimens, but many of them are of the rarest quality and value. The porcelain painting exhibited in the show-rooms here is not equalled by any in the Great Exhibition, and is of such surpassing excellence, as to warrant the French in assuming a superiority over any other nation. The painting of some of the figure subjects is truly grand, while the fruit and flower painting of Jaccobier it seems impossible to surpass; indeed I have never seen anything that at all approaches it. There are large vases, covered with ornament, which for beauty, distribution, and purity of form and colour filled me with amazement, and a feeling somewhat approaching to humiliation.

I think there can be no doubt but that the close proximity of the workshops to the museum must be of immense value to the decorators and designers, refreshing their memory, inciting their ideas, and continually adding to their stock of knowledge. And in this instance the French teach us a lesson, for while the examples purchased from time to time by the nation are very valuable and instructive, they would be of more use and real service if, instead of being assembled in the metropolis, each locality that is pre-eminently famous for some speciality had its own museum. I think by this means our national industry would be benefited, and the general prosperity of the nation increased; for it is obvious that, under the present system, our artisans (at best) can see the examples they need only at rare intervals, and that often, when they wish to make use of them, they have to depend upon recollections considerably weakened by time, and consequently of a very imperfect character.

In our progress round the workshops of the manufactory we saw nothing of an instructive character; indeed, we were not fortunate enough to see any one at work but a few potters, in whose occupation we were not interested. The painters were lounging about the shop, smoking and reading, neither of which delightful occupations were abandoned for their more legitimate employment, either in deference to ourselves or our gold-laced attendant. There was a silence and lassitude about the manufactory that may perhaps be in harmony with a royal establishment, but which to us seemed strangely at variance with the smartness and celerity of an English manufactory, where enterprising capital is seeking to be rewarded by commensurate profits. Our visit to this celebrated manufactory demonstrated one thing to us, viz., that their best performances are of former years, and that we are making greater progress than they, for I think it cannot be questioned that our productions at this exhibition are greatly in advance of all our former efforts, while in the general commercial articles of our trade we are really ahead of them.

Just as I was starting on my journey to Paris, a copy of the *Times* newspaper of September 13th was put into my hands; amongst its contents was 'An English Workman's Visit to the Paris Exhibition,' written so ably as to entitle it to approving notice in a leading article of the same paper. Notwithstanding the ability displayed in the writing,

It contained numerous fallacies, to one of which (as reflecting unjustly and injuriously on the British workmen in my class) I feel bound to say a word or two in reply, more especially as the statement I complain of has been adopted by the *Times* in the leading article before mentioned. The following is a quotation from the workman's letter:—"One thing worth mentioning, before leaving this part of the subject, and which we have not seen noticed before by critics, is that the most remarkable specimens, those upon which the eminent manufacturers mostly rely, are paintings by French and German workmen. We mention these mainly as one of the collateral facts supporting the great truth, that in matters relating to the higher branches of art we are deficient." The article in the *Times* follows thus:—"The French collections of *faïence* exhibit a richness of colouring which is not seen in English productions; it is admitted, indeed, that in ordinary decorations for the general market England probably stands first; but there is no power to go beyond this line." In support of the same view, it is observed, with reference to porcelain, that "the best specimens exhibited by English manufacturers are painted by French and even German workmen. In elegance of outline and delicacy of tint these artists excel all rivals."

Now is it true that our artistic deficiencies are really so great? My answer is, no. And in corroboration of my opinion, I beg to refer to remarks made by J. C. Horsley, R.A., who, in his report, published in the *Illustrated London News* of August 17th, says:—"In porcelain painting there is nothing better than the works of Allen, Mitchell, and Simpson, artists employed by Minton."

Now these are all of them Staffordshire men, born within three or four miles of the manufactory where they are now employed. Another witness to this fact is found in Leon Arnoux, Esq., himself a Frenchman, and one who knows more than any living man of what Minton's workmen are capable. What does he say? Why, I find in his report published in the *Illustrated London News* of September 14th, the following, when speaking of Minton's productions:—"But the best things in their glass cases are the many vases of soft porcelain with figure paintings. The largest pair, in *bleu-de-roi*, representing the toilet and birth of Venus, are from original paintings by Francois Boucher; they exceed in size all other vases produced in the soft material; they have been very successfully painted by Messrs. Allen and Mitchell, the same artists who have executed the painting on an Italian pair of vases decorated with a scene of young cupids playing in a picturesque landscape. The pair of large bottles, of Indian shape, decorated with white flowers on a celadon ground have been painted by Mr. Simpson." Do these great authorities admit that there is no power in the English workman to go beyond "the ordinary decorations for the general market?" I think not. Lastly, what do the jurors who awarded the prizes say, and what is their verdict? Why, of five medals given to Minton's workmen for porcelain decoration, they gave four to English and one to a German workman; and of four medals given to Copeland's three were given to English and one to a German, and not one to a Frenchman at either place. So much for the charge of English inferiority or incapacity. Ought we not rather to rejoice in the possession of those noble establishments, where private

enterprise and skill, without assistance from national aid, have so successfully competed with royal and imperial manufactories, for assuredly, since the Exhibition of 1851, no branch of British industrial art has made greater progress than porcelain of the higher order.

I have now concluded my task, and, with a distinct recollection of how dejectedly I left the Exhibition of 1851, on account of our unfavourable comparison with the foreigner, I am now, on the contrary, filled with encouragement, and I quit the Exhibition of 1867 with feelings nearly akin to pride, certainly with confidence and hope for the future.

S A W S A N D T O O L S .

By WILLIAM BRAMHALL,

SAW-MAKER, SHEFFIELD.

[In attempting to furnish a report on my own trade more especially, and on tools in general, after thanking all who have afforded me assistance in obtaining information, I wish to say that I have been in no way influenced by any party; and whilst on the one hand the greatest courtesy has been shown, I have been left to use my own conviction freely. This liberty is the more congenial as it places the entire responsibility on the observer.

Taking for doctrine that "nothing will I extenuate, or set down slight in malice," where facts and opinions may be stated contrary to my preconceived notions of my compeers, I shall be entitled to their consideration for honesty of purpose, having no ulterior view but such as a truthseeker always has—the truth in itself alone.

Although the Exhibition, in its division of nations, sections, and groups, is admirable, it is not so much so in its subdivisions, and required patient, plodding application, and passing over the ground repeatedly, coming in contact with matters which had previously escaped observation. Conscious of the great importance of obtaining a tolerably correct view of the comparative position of our own manufactures with those of other countries, I devoted an entire week to the study of my own department, as supplementary to several which had gone before; and considering the number of reports that the Society will receive, it should early be borne in mind that "brevity is the soul of wit." I find considerable progress made in my own branch of trade, even to astonishment, since 1862, with French, German, and Belgian exhibitors, not only in the number of exhibits but in the character of the work. Although English exhibitors are few, those that do show are a credit to themselves, and evince no falling off in point of excellence. Of course there is a greater scope for progress in an article the farther it is from perfection, and in the making of saws and tools their forms are ultimately reduced to rules and geometrical proportions for certain given employments, as well as the quality of material used for the purposes to which they are to be applied, until a well-stocked tool-chest is a repository of levers for disintegrating material substances, ranging from the most acute to the most obtuse angle. This great diversity of needs constitutes commerce; and when a tool is wanted it should be the thoughtful consideration of the artisan to meet that requirement with

the greatest possible skill. The softer the material wrought upon, the sharper the angle may be employed, running up the scale of *infinitum*, until the angles become a mathematical line, as seen in a flat-faced hammer that bruises a stone, and, by pulverising its particles, dissolves their cohesion. A knowledge of geometric forms would be invaluable to the artisan, and lift him from often only being an imitator of others, doing so and so because it has been the custom to do so; but reasoning on principles would make him in the highest sense of the word a master of arts, subduing rude matter to his will for his necessities.

England is still in advance of France, Belgium, and Germany for the highest excellence in the perfection of metal and of a cutting edge in saws and tools (without regard to their price), principally owing to the finer quality of the steel and greater care in their grinding, having greater natural advantages for superior grinding and facilities for power. The same does not apply to American tools, however, axes more especially, which for exactitude and finish have the appearance of being die-struck, so uniform are they in every respect. They are models of their kind, and show the grit of the Old Country in their formation, *minus* the prejudices that cling to us, and having a freer scope for individual exertion. There is something to learn from the *tout-ensemble* of these American axes, attributable no doubt to the excellent state education in force in the New England States of America, as may be seen in their model school at the Exposition. The Douglas Axe Manufacturing Company, Boston, Massachusetts, exhibits its goods made from Messrs. Pitt Brothers' steel, Pittsburgh, Pennsylvania. A medal of honour is affixed most deservedly. In the French manufacture of saws and those kind of knives—currier and tobacco knives—which form a part as it were of the saw trade, Messrs. Ch. Mongin, Aîné et Cie., established 1814, and first, Messrs. Galibert et Cie., Paris, second; both use similar machinery and Sheffield steel, in almost every case, in the proportion of sixteen of English to one of French, and would use British grinding stones, only the carriage makes them too dear. Those from the French quarries for saws and tools cost £2 5s. each, for a diameter of $4\frac{1}{2}$ ft. by 7½ in. wide. Being too hard for the work required from them, they cannot draw it as good a bottom as we can, but they aim to do with as little grinding as possible, by rolling saw sheets nearly to their required thickness, breast and edge. This has the tendency to make them somewhat light, and they will not work long before they must be hammered, as each stroke of friction on the tooth only confirms that tendency; yet these saws have a general uniform surface.

The few handsaw handles in the cases of French manufacturers show by their very faulty swaging, that they know little of the use of the handsaw or backsaw, but are mostly confined to webs. They are almost new tools to them. I have only seen one handsaw in actual use in Paris, and during a ten months' service in a Parisian saw *atelier*, we did not average making a dozen per month. The universal use of billet-*web* instead is the usage, although there can be no doubt but that the change to the handle from the unwieldy frame would be an advantage, as the weight of the tool is more immediately in the hand. One only net

observe two carpenters, one French and the other English, stirring a plank, to be convinced; Jean Bonhomme struggling to get his web and frame under weigh, while Joey Chips is making the sawdust fly, and gaining a saw-gate two inches long at a stroke.

Good tool-makers are benefactors to their kind.

The excellent method of stretching hand-saws, veneer-webs, and large thin sheets of steel, as practised at Messrs. Spear and Jackson's Elva Works, Sheffield, and other places in the same town, is superior to that of the French, excepting the use of coke instead of charcoal in the stretching fire, which is not so free from sulphur and is consequently detrimental to the nature of the steel, as it rapidly combines with it; yet on the other hand, the great force used by the screw in stretching sheets when hot, extending them until they are as tight as a piano-string, and, as it seems to me, giving them a positive elongated fibrous character, and a hardness incomparable, which they retain until worn to the hulk, is an immense advance on the old system of tempering in an open furnace, in economising labour, and in improving the uniform temper of the blades, so that many dozens come from the stretcher in such a state that under the old *régime*, with all imaginable labour, they could not be made equal to them. This is not always the case, but, with few exceptions, it might be the rule with such excellent appliances.

The French—and I speak of the French as being our most formidable rivals for finish, surpassing us in matters of taste—are very defective in the paring department of saws; the process is slow, and resembles more the chipping off the steel than paring it like paper, true as a line, and void of crinks: the contrary is the case with the guillotine shears. But their method of toothing is as laudable as their paring is primitive.

They leave the toothing of their saws until they are almost finished—often after glazing—to save filing and files, which are dear tools to them—when they have duplicate beds with a punch working down them. The saw plates are put between them, and the teeth cut in that manner. The beds being so arranged prevents the teeth both from shearing and felling, and unless they are very hard or burnt they will not break in this process. They are toothed with such fine points that they will cut as they come from the fly. They have but in one instance, as far as I could learn, successfully applied steam to toothing saws, and that for narrow hand-saws, for which France nearly monopolises her own and the English markets. Large and small circular saws are machine-ground, as with us. They elaborate with great care two-foot circulars of the 20th gauge, and finer, for sugar-cutting, to supply the cafés with dominoes of sugar, three to a cup of coffee, according to governmental regulations, in length, breadth, and thickness. Minute circulars for cutting small-tooth combs are made out of stretched and glazed steel; the lash from the sharpening of the teeth is sufficient to clear the ivory dust, and acts in the place of set. They are at home in the manufacture of those knick-knacks. Some houses have lately employed English saw-makers, at nearly double wages to their native workmen, in order to get a thorough knowledge of the English method of making the largest kind of circulars. The first-class firms pay every attention to each department, especially to having them flat and of a good uniform temper.

In order to secure truthfulness, long-saws, which have been previously stretched, as well as circulars, are placed on a flat board, or piece of planed metal, and rubbed with a stone, so that any irregularities of surface are soon seen, and returned to the anvil for correction. Circulars 5ft. in. are "golfed" by a steam press, screwed on to them during tempering.

Messrs. L'ougeot, Jackson, et Cie., depôt in Paris, have their works in the country, where wages are lower and living cheaper. They exhibit a large quantity of saws and tools, more eminent for the mass than quality, who, nevertheless, have a medal, possibly on account of the price of production.

Messrs. Coulaux et Cie., Bas Rhin, show saws and tools, but chiefly webs.

A silver medal is given to Messrs. Martin, Miller, and Son, Vienna, for saws and tools.

M. Brizard, a Belgian, honestly advertises his tools to be made from English cast-steel.

M. Fagersta, Sweden, has saws with the imprint in English, and as much like English goods as peas are like one another.

Messrs. Chouanard, Paris, exhibit general tools, who can hardly claim to be makers.

Westphalian saws are exhibited as forged from puddled rod; one end is the finished article, the other a rod of steel, leaving no doubt of the process. Very unfinished.

Messrs. G. Goldenburg et Cie., Tornhoff, near Saverne, exhibit freely in saws and tools. Saws unset. The tools all steel. There is a French machine for sharpening saws by steam that does its work very regularly. It has a band-saw under operation. The file passes straight through, when an index opens the vice and slides the saw a tooth in advance, then the vice closes on it again, and so on repeatedly. If the file progressed instead of the saw, the process would be less complex and more successful: as it is, it might be used for filing up saws with broken teeth in them. I believe in its practicability: not so in numerous machines for "setting" the same, that are mainly a series of screws, wrenches, and levers, when a simple setting-hammer and anvil, technically called a "stake," are all the tools necessary for that manipulation. They are safe, simple, and portable.

Messrs. T. Turton and Sons, Sheaf Works, Sheffield (Class 40, No. 126), have a good show of saws, tools, files, &c. A gold medal has very justly been awarded. The arrangement of this case is chaste, attractive, and simple. This old-established house maintains its reputation against all comers, and has for *vis-à-vis* in the world's show Messrs. Bury and Co. (limited). They have cast-steel, in bars and plates, for various purposes, cast-steel forgings, files, edge-tools, hammers, &c. The files are the largest shown; the tools are very varied in their shapes, massive and well-made.

The samples of well-tilted steel from every Sheffield house would lead anyone to expect good tools. No doubt much of the excellence of British tools is attributable to good tilting and forging, which are synonymous, the one by hand, the other by power: and this is a distin-

distancing characteristic between the English and the Continental tool-maker. The latter has an abhorrence of heavy hammers, and prefers to file twice lightly, to once with force an effective stroke. A deal of heavy forging is done single-hand.

Mr. J. V. Hill, 253, Gray's-inn-road, London (Class 40, No. 59), has much case of handsaws and backsaws, which are gems of their kind.

Mr. J. Audie, 49, Worship-street, Shore-litch, London, shows carvers' saws. The name of this maker, for a long time, has been inseparable from a good tool, and clings to him still as his speciality. It is a common pleasure to inspect his samples.

Messrs. F. Keng et Cie, Vienna, exhibit saws for wood and metal working. The cheapness with which these fine hair-like saws can be produced in Germany excludes them from English manufactories. The work of German sawmakers is light, so is their food, and so is their pay. They chiefly live on bread, wine, fruit, and vegetables: make saws that can be packed in a tobacco-pipe stem, and receive for twelve hours labour three francs only—equal to 2s. 6d.

Saw grinders have the same wages as the makers; hence, when they get to Paris, and have from four to six francs a day, they save money about it. How they do it is marvellous, considering the price of the *logements* and the rate of living.

Messrs. J. H. Weiss et Cie, Vienna, send some creditable edge tools.

Messrs. Frank Wertheim et Cie, Vienna, have a large case of nearly all kinds of saws and edge tools, labeled "Sold; destined to be distributed among institutions in connexion with the Museum of South Kensington. These saws are set with a gauge, deep into, crinkling and denuding the blades. "Cast-steel" is struck on them, in English. They can only rank with decent second quality.

Out of the Exposition, the shop windows of Parisian dealers should be seen to ascertain who suit the fancy of buyers. The saws, files, and tools that seem most in demand are from Sheffield, bearing the marks of Spear and Jackson, T. Tipton and Sons; Flather and Sons; Bury and Co.; Bramall and Bedford; R. Sorby, Brown, and Co.; Spencer, &c. The last-named is almost ubiquitous in files. I am informed by a file maker in France that, for six years, he marked more files with that brand than any other. Another authority says that the house does not take one-fourth of the files sold with that brand.

There is still considerable piracy of British marks on the Continent by tool-stew, who have nothing to lose for those who have.

The continental in the highest class of saws and tools are not quite equal to us, but much of the second is, and the price of production and heavy import duties being unequal, they are powerful rivals against us in their own soil. The idea that they are dependent on us for those things may expire any moment. One thing is evident, that with the present rate of progress we shall shortly lose our marked superiority, unless new and extensive mechanical appliances be resorted to, or new markets are opened to us. There are vast regions in the East of the globe that loudly call for this, and that would in return supply us with food and material for clothing, &c. "No man liveth to himself," but is human atom in the universe of life, with God over all; but man's

short-sighted restrictions interrupt His providence, and bar intercourse between man and his fellows. Trade in all its operations should be free as the air we breathe; the rain that descends from Heaven, and the Creator's great highway, the ocean, each are typical and suggestive of free trade. All is for the benefit of humanity and the development of latent abilities in the human race, which are rarely exhibited but under the pressure of adverse circumstances.

Trades associations for promoting strikes are illegal. The "Conseil des Prud'hommes" is a legal board for settling disputes between employer and employed. Its successes are well known. But recently, 19 tailors were brought to judgment for the late tailors' strike in Paris, and were mulcted in various penalties by way of asserting the law's authority. There are many friendly, sick, and funeral societies among working men, but freehold land allotments are impracticable. There are thirty-seven co-operative societies in Paris, of whom the builders are the most extensive, entering into large contracts. There is also a very successful society of *ouvrier* file makers, established in 1845, the details of which exceed my province.

The apprenticeship system is perfectly open; any master or man acts according to his own pleasure or convenience, the only restraint being that from the government. An indenture is null and void that interferes with a young man during the time that he is liable to be drawn in the conscription, which commences at twenty years of age, and he may have to serve until he is twenty-five in times of peace. He cannot contract a marriage under twenty-seven years of age, without having first the consent of the government, and then that of his parents.

Very little can be said in favour of our continental brethren on the score of their amusements. Some there are who attend evening schools and music classes but the great bulk spend their time in humble cafés—restaurants—inasmuch as they have no homes worthy of the name—go to cheap places in the theatre and balls, or the never-failing cards and billiard board, smoke and pass the night away until it is time to creep into their nests to sleep, and then early to the dull repetition of every-day's toil, often Sunday included, for very inadequate remuneration.

There is a species of skittles practised at the barriers with a wooden trencher. The pins are upstanding, when the trencher is started to run round them, describing a smaller circle each succeeding turn: the most pins down win, very naturally. These are not to compare with cricket, football, boating, or volunteer military exercise.

The continental saw makers suffer from pulmonary diseases, arising from their habit of sitting to their work, and bending over their stomachs, causing them to have contracted chests; to which may be added inveterate smoking, long hours of toil, and intolerable heat, without a proper amount of ventilation, each of which is capable of entailing consumption. They obtain their light from the roof, as in a conservatory, and in the summer suffer greatly on account of the heat thus generated. There is not sufficient attention paid to ventilation by English saw makers, where they have the remedy in their own hands, either from carelessness or an unconsciousness of its importance. On winter evenings, as darkness draws nigh, fires are mended, then gas is lighted, and the

rooms heated like stoves by these means: men work to perspiration in this hot and vitiated atmosphere, to come out into one that chills to the bone; precipitation of blood to the lungs ensues, and consumption sets in, when it is only regarded as a "little cold" that has been taken.

A— regards education in France, about ten per cent. can neither read nor write, but the idea of a grand system of national education is gaining ground. Some towns have already adopted a plan for schools similar to our own free library effort. The manners and bearing of working men towards one another is much more respectful than with the bulk of English shopmates. Their sobriety is proverbial. Thrown much into the world, they are quite at home there. Children are taken at an early age by their parents to eat in public, so much so that they never remember their introduction into society.

During my sojourn among the Parisians as an *ouvrier*, I furnished a few sketches of *ouvrier* life and labour to the *Sheffield Daily Telegraph*, written whilst my impressions were fresh and vivid, some portions of which it may not be amiss to recapitulate here by way of illustration:—

ECONOMY OF FRENCH MANUFACTURES.

"Alternately the nations learn and teach."

This motto, which was one that was adopted for the last international exhibition, applies with great force at present respecting the progress of France and England in the useful arts, and especially for some articles of production for which our good old town for so long a period has been famous. France is making rapid strides in articles hitherto considered to be Sheffield ware.

The temerity of such manufacturers to cross their own borders and the Channel, and find profitable markets on British soil—these very dealers who consider our own makers as poachers on their preserves, but are quite prepared, in true cuckoo style, to hoist native birds from their English nests. France labours under great natural disadvantages, but these are more than counterbalanced by her great economy. It is a parallel illustration to compare France to the miser who saves his candle-ends and wastes nothing, and England to the rich heir of a noble patrimony, who dispenses it lavishly, keeps open house to all who will partake of his bounty, never dreaming but that his estate will be for ever productive. No one can conceive the method and economy of France without submitting himself to its code, and studying closely its spirit and letter. Nothing is wasted that can be submitted to computation, or compared by figures. Scraps of wire, paper, and steel, and even steel filings, are made to yield a profitable return. A ten per cent. profit is not despised, and wages are reckoned in thousandths, their decimal system of calculation enabling them very readily so to do. In proof of our assertion we enclose herewith an identical *calcul* of our fortnight's toil, and a sample of paper used for these and similar purposes, where it will be seen that our rate of remuneration per hour is eighty-three hundredths and thirty-three thousandths of a franc. A franc is twopence, or close upon it. Everything is economised apparently to its utmost. The proprietor has absolute control over his resources. His

orders are issued like a commanding officer. There are standing orders, and orders of the day, and implicit obedience over all. Time for labour is ordered to suit the light and heat of the day, which is important in summer. Work is moved to and fro by those who act as satellites to the great luminary, and by a concentration of forces on a given point much work is rid in a short time when needs be. Men sit to their work, which is an economy of strength. A man can work longer sitting than standing, and a useless stroke must not be struck. If one unused to this nicety strikes his anvil by way of imparting impetus to his hammer, he is remonstrated with, informed it is useless, and a blow thrown away—he must unlearn that and learn to do different.

We will give a fact or two to show the working of the system. A boy, three minutes after the second bell, is caught eating a crust, is dismissed for the day, to finish it with the loss of a day's pay. A man carries signs of giddiness in the afternoon; he must take half a day's reflection and a night's rest to compose himself for next morning—he has got off well. Another has not fastened his overalls when the second bell has rung, he is summoned to the bureau—he returns ashy pale, takes his traps and his number, and we hear his wooden sabots on the pavement no more. A Sheffield smith has partaken of an abomination which the French call "Shoo," which for tenderness was like an old shoe, and for the weight on his stomach might have been the "seven-league boots," but its botanical structure impressed him that when it was an infant in the hands of the nurseryman, it was, long, long ago, a cabbage-plant; but whether the frost had killed it, or it had died of old age, or the gardener had decapitated the head from the trunk to prevent either casualty, deponent knoweth not; but shoe or no shoe, it might have proved his last. Well, it was necessary to take a full pennyworth of real stingo brandy, to fight the green monster that threatened to overpower and fatally to subdue him. In order to obtain this, permission must be had to cross the street and back, and consume perhaps two minutes and a half more time than was consumed in the preliminaries. Luckily the "St. George" brandy slew the green "dragon" cabbage. A man may take a pinch of snuff from his own twist of paper, and it will be winked at; it may serve to sharpen him up a bit, but not do it habitually. He may take a quid from a similar source; it acts as an impediment to conversation, and conduces to reflection. Time is precious in the Frenchman's eyes. And are not moments of time precious? What are they but highly-pulverised, infinitesimally small particles of diamond-dust brushed off the koh-i-noor of eternity by the finger of the Omnipotent for the probation of puny man? These moments are of such value that if a courier in the shape of a letter comes from the city of knives it is trapped, placed in the ticket-cage, tethered to our ticket-hook until labour is done; we may not read it before.

This is the thorn in the stem of the rose, and often it lacerates the heart. But the troubadour imprisoned sings mournfully, plaintively. We try to catch his refrain, but are not certain of his strains. Sings he—

"Good news from home, good news for thee,
I bring across the deep blue sea."

or "Come whoam to the childer an' me;" or "Old folks at home." This is the time to test the temper of the steel. But after all is it not just? Is the scale of justice scrupulously adjusted, and weighted out accordingly? A man who labours by the day, implied by his engagement to do no less than he can during his service, without detriment to his physical or mental power. We admit the justice, but an English rearing has induced us to adopt, without feeling its rigour, the French system of economising time.

In these our humble pen-and-ink sketches we wish to draw to the very horizon of truth, beyond which we will not willingly go,—for there is the vast, vague realm of fiction. Let every distinct feature of the French landscape be definitely marked in bold contrast with our own, and we shall find that the French manufacturers have advantages which the English do not possess. We write for no man, for no party; but give expression to the convictions within us, without fear and without favour.

Here the master has all the power of a despot: and despotism may be used to advantage occasionally. It depends very much upon the man. In point of law notice must be given eight days before a servant can be dismissed: but he must comply with all the bye-laws of the establishment to which he is attached, and the master makes those laws. There are no unions but such as are for beneficent purposes—such as sickness or death. All trades are in this union; and the French ouvriers receive one another as brothers, without jealousy for fear of overstocking the labour market, and keeping the prices down. Wages are lower than with us; but they live within their means, and are less liable to fluctuations in trade. Cheap hands, with the aid of machinery, perform important offices; and united with great vigilance by the various heads of departments carefully watching every process, and continual supervision, it is only natural to expect important results. One peculiarity here is a share of the profits to all employed,—to those who conduct themselves properly and respectfully to their fellow-workmen as well as to their employers. Another is the development of "speciality," or a gift for a particular kind of work. A man or boy is encouraged to express his likings or dislikings for his employment; and it is no rule that because his father was a chimney-sweeper he must through life pursue the same vocation. If he has the ability to command an army there is a place for him in prospect. One of the leading French generals is of humble origin. Worthy sons of labour, who strive for progress, are recognised, honoured, decorated, and pensioned. But recently a cobbler and poet was received by the Emperor. Social equality is perfect: political equality is nowhere in France.

But we are deviating from the track. In the economy of French manufactures, if we observe how material is used, how a very small amount of fuel is made to feed a tolerably sized engine,—the ashes being burnt over and over again, with the admixture of well-wetted coal dust; the preliminary heating of water before entering the boiler to boiling heat, and the saving of labour by mechanical appliances, we shall be surprised. In the fabrication of saws there are adaptations undreamt of in England:—that saw-grinding is nearly repealed, and may shortly

be utterly abolished ;—at the present it is a perilous, profitless, prejudicial process, to prepare a puddle to plaster a pigsty with,—in other words, to make wheels-swarf. And this same swarf, what is it ? Is it valuable or valueless ? How much metal does it contain, and is it worth extracting ? As a mechanical mixture does it contain any of the elements necessary to pottery ? If it does, why not employ it, and not throw it anywhere ? France has entered the commercial list as a rival to England. Is it to be the race of the hare and tortoise ? The tortoise won. The arts must progress : "standing still is going backwards." Processes newer and better must be adopted if Old England would not be beaten by Young France.

DOMESTIC CONDITION OF THE FRENCH OUVRIER.

The general domestic condition of the French ouvrier is greatly inferior to that of the British workman. If we speak of him with regard to his family comforts, adjudged by the English standard, "home he has none." There is not a word in the French language which can express the idea of an English home, for the best of reasons—the idea has never been conceived. At the bare mention of the word "home" we suffer a partial garotte ; the word sticks in our throats nigh to choking us, and when we try to sing the good old song a mother sang to us when she dandled us on her knees when a boy—"Home, sweet home"—the most insensate heart could not repress emotion ; nor would we have it otherwise, or we should love our country less. Tears at such a time are the sprinkling of the holy water of the heart, and, whilst sprinkling, bless "the land of the brave and the home of the free," which is at one and the same time the palladium, representative, and embodiment of liberty. We are apt to grow vain when we think of what she has achieved in the cause of progress, and what her glorious institutions are capable of performing. We have learnt this in the best, if bitterest, of schools—that of experience—which teaches us as no other does, and we cheerfully submit to its instructions. Some things are viewed best at a distance, and being isolated from country and home, we see things on a broader base ; and dear old daddy Bull, whom we have abused freely many a time for his rude, uncouth manners, we now consider it is but his way of expressing heartiness, which is worth ten thousand gilded glittering shams, and we prefer the grip of that bear's paw of his, enough to crunch the digits when he seizes them, to the meaningless blandishments of a superficial politeness. Genuine politeness springs from an ingenuous heart, whatever manner of demonstration it may assume.

We have said of the ouvrier, "home he has none," but he has a French home, which is eight stories high—as on Boulevard Richard Lenoir and numerous other places—is eight feet square, and pays eight francs per fortnight for the accommodation, and must carry his muddy water—which he has previously bought—and all he needs to his sky-high chamber, and must bring all his refuse down from that elevation ; and he is in good quarters when he is thus located. He has a little bed that turns up, and a little table that lets down, which must be done alternately each night and morning in order to make room. He has a couple of small

chairs, as many basins, plates, knives, forks, and table spoons; a pot à feu, a tree planted in a tusty pot if possible, and a bird in a cage, nearly comprise his household goods. One suit of clothes, with blue cotton overalls, and a change of under linen, constitutes his wardrobe (he is substituting leather shoes for wooden sabots); he has a perforated tree-pot for a stove, and with this, with a basinful of charcoal and charcoal dust, whose fumes are poisonous, he must cook his Christmas dinner; and his condition is improved, for are there not lavoirs, or washing-houses, where his wife can wash for the public, if she does not work at anything else? All wives do work really hard, and long hours too. There is not much wonder if the *ouvrier* and *ouvrière* prefer to spend the hours allotted to them between toil and rest at some cheap cabaret, or *cabnerie*, where some wandering minstrel is sure to come and screech out something about "amours;" and the tidy, giddy, little body, the wife is as happy as an empress whilst she tips her long white broad cap-stem down her back, adjusts any straggling hairs, or causes some to straggle, to set off her charms. Then there are cards, billiards, conversation, and the universal pipe or cigarette. Why should he not be happy? He never was better off; never so well off as at present. They have reduced the hours of labour one hour per day, and the ten-hours' labour movement is making headway, though some work sixteen hours now. But there is a disposition not to enforce Sunday labour unnecessarily. It is found that periodical rest is sound economy. Then there are the fêtes, theatres, balls, races, regattas, and fairs on Sundays; and wine is cheap, if it is weak, and the *ouvrier* may use as much water as he likes from the decanter on the wine-shop table to make it last longer. But what of his children all this time? It is quite a common occurrence to have none, generally only one, and quite a rarity to have two. They are cursed out whilst the parents work. France is degenerating in her procreative faculty: the flower of the land are sacrificed to military glory. All suffer the conscription, and the authorities reject the feeble and ailing, and retain the strong and florid to perish by the multiplicity of adventures that beset a soldier's career. Free trade and peace would bring such blessings to France as have never entered into her erratic brain as yet. The impoverishment which this country suffers from war is beyond credulity, and we fear is destined to suffer, for she cannot or dare not disarm; hence future impoverishment.

Many *ouvriers* live beyond the fortifications, in order to live more cheaply; and there are numerous instances where they walk six miles to their work and back each day; and at early mornings all roads running citywards are seen with men, women, and girls, like trickling streams at first, increase to the dimensions of tidal rivers until they debouch on the ocean of Paris, and then it is slack water, the tides mingle, currents running every way. How many that are cursed with beauty are lost in that sea of pleasure is beyond our computation; but this is known, that some mad barks founder there every day, lost irretrievably!

FRANCE AND ENGLAND CONTRASTED.

If that which is true in physiology also holds good in politics, namely, that opposite consanguinities have fruitful results, then we may stretch

our imagination to its utmost limit, and we shall be unable to conceive the blessed issue that may accrue from the Anglo-French alliance. Nothing "in the heavens above, or the earth beneath, or the waters under the earth," can be compared to it unless it be the poles that are diametrically opposite to each other, and yet act harmoniously together, but could not act separately without detriment to both. Each land possesses what the other requires, and mutual interchanges would be abundant if the shackles of commerce were irreparably broken, fused, and reduced to their original elements—the state of things that existed before custom-houses were invented. They are opposite in their possessions, opposite in their productions, opposite in their liberties, opposite in their faith and practice. France has many noble aspirations. She venerates beauty, but not beauty's source. She is tasty always, wonderfully skilful in minutiae, and economic to a degree: but she is atheistic, which is at the root of all her troubles—she could not be evangelised and remain enslaved. Split up as she is into many political factions, she has become like the bulls in the fable, a prey to the lion—the strongest party. Atheism is socially incohesive: evangelism is accretive, and embraces the human race. When we say "Evangelism," we mean the results of the doctrines of Christ.

England has great material wealth and latent force in her coal-beds—black diamonds, more precious to her than the mines of Peru or the gold-diggings of California—which to a great extent dominate her position on the earth. France requires most of all this product of England in her effort to extend her manufactures. It is this alone that cramps her commercial endeavours.

We sometimes imagine the two countries represent two lines; England is the straight line, the line direct, mechanical, mathematical, without variableness or shadow of a turning: whilst France is the curve, the line artistic, "the line of beauty and of grace." Yet if beautiful, devious, crooked in her policy, pursuing a war for an idea, and sloping off into a reality in the shape of the City of Nice. England, like her representative line, is straightforward and upright, adopting a cause from its justice to her disadvantage for a time, as in the American question of recognition. She confides in principles, whilst her ally is tortuous and acts from policy. Principles are the moral attributes, the reflections of the mind of the Divine Creator. Policy is a conglomeration of subterfuges, and the invention of men. Great moral changes would be the result of mutual interchanges.

If the wines of France were substituted for the besotting decoctions of John Barleycorn, and the coal and coke of England in the place of suffocating charcoal, our land would become more sober than any Maine Law or Permissive Bill could effect, and France more domesticated—which it greatly needs.

In England the government is the servant of the people; in France it is their master. England has universal suffrage in a free press; France has universal suffering by the contrary. Of all the heavily-taxed things in France there is nothing equal to the taxes and embarrassments on thought and the diffusion of knowledge. In England a man may say what, where, and when he pleases, for or against the government, in the

journals or in public meeting assembled, none daring to make him afraid. In France a poet, patriot, and scholar must consume his soul by meditating on ideas which, if uttered, would shed a lustre on his name, and bless the present and succeeding generations; but he must not breathe them to hopeful listeners at a trades meeting, oddfellow's society, or club feast, nor sing the patriotic song which every child knows, "La Marseillaise," without the presence of a government agent, who must report to his superior the result of each assembly; or write in a periodical without the chance of having whole paragraphs expunged or diluted by the censor, with a prospective residence in the sultry, sickly climate of Cayenne, with the unmusical accompaniments of ball and chain in his vandy. In England the press is its own, only, and best censor; and we to that erring brother who deviates from the paths of rectitude; he should have the hide of a rhinoceros to resist the merited flagellation he is sure to receive from his enraged brethren. He must have as many lives as a cat if he survives their retribution. The liberty of the press is the safeguard of the liberty of England, and should be as scrupulously guarded, for by its means everything that is desirable, noble, and attainable may be achieved. This accounts for the apathy on electoral reform. So difficult is it to please the French censor, that some journals have given it up in despair, and announce on their title-pages that politics, social and domestic economy, are not permitted to be discussed in their columns. Imagine the *Sheffield Daily Telegraph* without these, one number only. It would be a curiosity. Nobody grumbling at nobody. Everybody satisfied! with poor-rates, highway, and bridge-rates; boards of guardians doing as they liked, and nobody grumbling—even the tea-totallers would have to be quiet. Would it not be a "happy valley?"

Then there are the taxes on knowledge, of six centimes per number of a journal, and ten centimes on a double-crown bill, together with the obnoxious intermeddling, and the bond which the publishers must enter into, so that everything, down to a business bill-head or label, is affected by it.

The walls are not covered with large posters, such as we see in London, Manchester, and Sheffield, and the theatre bills are caged against the wall, unpasted, with a wire covering over them, so that they may be removed at pleasure, put by for another day, with simply the alteration of the date on the top of them. The printing business of France, notwithstanding their appliances for art, is greatly inferior to that of England. It requires courage to be a printer in France, to struggle against the difficulties that are thrown in his way.

There is a wide difference between the French and English ouvrier in the matter of domestic condition. Will a handful of poisonous charcoal, in a contrivance like a tree-pot, compare with a nice bright English coal fire in an open polished grate, which heats and enforces ventilation at the same time? Think of both at Christmastide with snow on the ground and the thermometer dropping fast below freezing point, the French ouvrières warming their benumbed fingers over the flame of their lamp to keep them from being frost bitten, whilst in dear old England the "waits" carol the Christmas lays without, the fire of half cwt. of coal roars up the chimney in defiance of the external blast, spice

bread, cheese, and hot ale, or, better still, some motherly home-brewed elder syrup or blackberry wine, hot, well seasoned for coughs, colds, and influenzas, and then the "waits" come in and sing, "Unto us a child is born," and "Shepherds watched their flocks by night." Everything shines within. It is the Christmas festival, and the time for families to meet. Everything may well shine—everything has been got up to shine. The berries on the mistletoe-bough shine, the cherry-checked apples and the luscious oranges shine—the servant girl rubbed them well before she fixed that bush, and wondered who would kiss her first under it—the fire-irons, and so does tabby's back, as he rubs it against them, shine; and how many shining faces, sparkling eyes, and warm hearts; we cannot count them, only we see two sit in one chair, and another turned down to accommodate three, and some of the losses are forced to sit on the young chaps' knees; and, whilst this is going on in England, the French ouvrières shiver at their work as they ply their needles as fast as they may, for they are joyfully looking forward to New Year's Day, when work will be suspended until they make a few hasty calls on some they have not had time to visit since last New Year. The two peoples seem grateful in inverse proportion to their advantages. France, with nothing to be gladsome about, froths over with gratification, whilst England is crushed beneath the fruition of blessings, and is inconsolable without incessant grumbling. It is the case of the feather and the guinea in the scales. England bumps down by the specific gravity of comforts, whilst France is the feather that kicks the beam. Black and white are not in greater contrast than in the observance of the Sabbath and the institution of marriage.

On the question of armaments. All able-bodied young men must pass an apprenticeship in France of offensive and defensive warfare, which is the most abject slavery when it is involuntary. In England all are volunteers, though ranged in various classes; but one force has received that generic term, and is constituted for defence alone.

The fact that 160,000 men in all ranks of life should forego some comforts, and submit themselves to military discipline without the prospect of fee or reward, but to be able to sell their lives dearly if need be for their country's sake—that a money-making people like the English should do this—passes the comprehension of Frenchmen, and does more than anything else to cause Great Britain to be respected on the Continent. Will the alliance continue for the benefit of both? Yes, so long and no longer than England is France's best, because strongest ally, for, the moment she is weak, she is open to insult and humiliation, which would assuredly follow if she were not able to resent every indignity advanced against her. England, strong, impregnable, can afford to be magnanimous, and, being undivided on any great question of internal administration, can "rest upon her arms," whilst the world is in the convulsive throes of revolution.

England strives and prays for peace: France still pants for military glory. England acts as a check to this passion of France, whilst France in return keeps England sensitively alive to the sense of honour. Were it not for the great gulf of language, the allies would rapidly assimilate in many important particulars; as it is, cheap and rapid communication by

telegraph, rails, and post (what a good thing international penny post would be) will more slowly accomplish this.

In conclusion, it is not only with feelings of regret that I have to report upon the inferior condition of our continental fellow-labourers, but that of deep thankfulness that "we are not as other men are." No doubt some will think it ill-advised to have reported the rate of continental wages, and that it will act detrimentally to British workmen in that respect. I have no such fear from the publication of the truth, for a variety of reasons, but it would prolong indefinitely this already too long report to enter upon them.

I wish to thank the Society of Arts for the honour of being appointed to fulfil a duty which, from my heart, I feel has been very inadequately performed.

C U T L E R Y .

By JOHN WILSON,

SHEFFIELD.

GENTLEMEN,—In accordance with your instructions I visited the Paris Exhibition, and the following report gives the results of my inquiries. I obtained information on the subject of my mission from various parties. Where the statements of masters and workmen differed I endeavoured to ascertain the opinions of independent parties. The information about "grinders' asthma" I obtained from a razor maker and grinder, M. Landais, who supplies some of the Parisian shopkeepers with blades. To him I am indebted for other information, as well as for a grindstone, which I brought home. The representative of your Society, M. Haussoullier, a gentleman well informed on questions of French industry, confirmed the statement of M. Landais about the excessive rate of mortality amongst the grinding trades. I desire to express my obligations to M. Haussoullier for his courtesy and the readiness with which he afforded me information. I should be ungrateful if I did not acknowledge my obligations to Thomas Jessop, Esq., ex-Mayor of Sheffield, who gave me letters of introduction to his representative in Paris.

Through the instrumentality of Mr. Hounsfield, the agent of Messrs. Wm. Jessop and Sons, I was enabled to see several Parisian workshops. I am thereby able to speak of their methods of work, and compare them with our own. The ingenuity of some of the workmen is very great. M. Soulas (Rue Oberkamp) makes good tailors' shears and other articles. He most readily allowed me to see both forging, grinding, and finishing. This seemed a pleasure to him, when he knew I was recommended by "Monsieur Jessop." Mr. Hounsfield furnished me with a guide, who seemed to know nearly all the cutlers in Paris. A residence of more than 30 years on the Continent, and his practical knowledge as a Sheffield workman, rendered his services of the greatest importance in prosecuting my inquiries. I could not obtain statistics of the population of Thiers, Nogent, and other seats of the cutlery manufacture in France at different periods. These would have enabled me to compare their progress with that of Sheffield.

A report on the manufacture of cutlery would be imperfect without briefly considering its early history. Manufacturing progress can only be understood when we have a given condition from which to start. When or where the manufacture of cutlery became a settled branch of industry it would be useless to conjecture. One thing, however, is

evident, viz., that little progress could be made in material civilization without the use of cutting implements. History tells us of the excellence of "Damascus steel." The swords and implements made from it have had an almost fabulous reputation. I use the word "fabulous" advisedly. The assumed superiority of Damascus blades was owing to the comparison being made with the implements and weapons of preceding ages. These were made of bronze or copper, and were superior to the flint and bone implements of the pre-metallic period. Some who endeavour to account for the excellence of Damascus wares suppose the workers possessed secrets now lost, as, "tempering their steel in the north wind." The accounts of historians lose some of their value when they confound the processes of hardening and tempering. There is an antiquity about the following:—"Damascus was long celebrated for its steel manufactures. Tamerlane, on his conquest of Syria, conveyed all these into Persia. Since that time they have been little memorable, and yet we are told that in the 17th century above 20,000 artisans were busily employed in making sword-blades, worth fifteen French crowns apiece, and that the water of the Barrady was excellent for tempering this metal. These sabres were formerly of the highest reputation in the East. They seem to have been constructed, by a method now lost, of alternate layers of iron and steel two or three lines thick. They never broke, though bent in the most violent manner, and yet retained the utmost power of edge, so that common iron and even steel would divide under their force." If these blades were constructed of iron and steel, as stated, their great elasticity is an ancient fable. In more modern times Toledo, in Spain, sustained a high reputation for its cutlery, but, as this was within the period of reliable history, Toledo swords have not been so famed as those made in Damascus.

When Sheffield began to rival these old seats of manufacture, it would be difficult to determine. There were iron works in Sheffield soon after the Norman Conquest. Sheffield knives were known in the time of Chaucer (1328—1400). His well-quoted line shows this:—"A Sheffelde thwittle bare he in his hose." The state of manufactures continued rude long after the time of Chaucer. We possess little knowledge of the cutlery trades on the continent of Europe at this period. Subsequently to the time just mentioned, there is a curious sentence in the works of Rabelais: as it describes one process of manufacturing I give it:—"As for example we do sometimes see cutlers with hammers maul their finest whetstones, therewith to sharpen their iron tools the better." It is doubtful whether in Rabelais' time (1484—1553) the Sheffield cutlers had so far advanced as to possess coarse and fine grindstones; the latter still need "mauling" with hammers. The cutlers from the Netherlands, who came here to escape the cruel religious persecution of the Duke of Alva, about 1570, probably taught the use of whitening stones. Queen Elizabeth, by the advice of the Lord Chamberlain (the Earl of Shrewsbury), settled these foreigners in different parts of the kingdom. The historian of Hampshire says, "All, or the greater part of those who were artificers in iron, were sent to the Earl's own estate in Yorkshire, and hence we may date the first improvement in Sheffield cutlery. Now began to be made spears, dikes, knives of various kinds, and

scissors, the manufacturers of each article confining themselves to some particular village, which arrangement, in a great measure, continues to this day."

It will be thus seen that the continental workmen were then superior to the English. This will enable us better to estimate the progress of each to the present day. The infusion of new ideas gave a stimulus to the cutlery trades. In the 21st year of James I., the Act incorporating the Cutlers' Company was passed. The preamble throws some light on this subject. It states:—"Whereas the greatest part of the inhabitants of the lordship of Hallamshire, in the county of York, do consist of cutlers, and those who make knives and other cutlery wares, made and wrought of iron and steel, as sickles, scissors, and shears, and by their industry have not only gained a reputation of great skill and dexterity in the said faculty, but have relieved and maintained their families, and have been enabled to set on work many poor men inhabiting thereabouts, who have very small means or maintenance other than by their hands and daily labour as workmen to the said cutlers, and have made knives of the best edge, wherewith they have served the most part of the kingdom and other foreign countries until now, &c." To have made knives of "the best cutting edge" was the highest praise, and it is the best test for cutlery.

In the *quantity* of cutlery in the French Exhibition, England compares disadvantageously with the French. Such a result is not unexpected. Great Britain has only eight exhibitors in cutlery, while France has more than fifty. Besides the paucity of numbers, there is an absence of the largest Sheffield manufacturers. Mr. George Wostenholm, being one of the jurors, did not exhibit, and yet there are few trade-marks better known than the L.X.L. The celebrated firm of Rodgers and Sons, whose corporate mark has been granted more than a century, was conspicuous by its absence. This is more to be regretted when we remember the display made by them in the Exhibitions of 1851 and 1862 in London, as well as that of Paris in 1855; besides, no firm has done perhaps so much to extend the fame of Sheffield for its staple productions. The principal exhibitors are Mappin and Webb, London and Sheffield; Davis, London; G. and L. Morton, London; and Brooks and Crookes, Atlantic Works, Sheffield. The last-named have a splendid assortment of scissors, razors, and knives; they are tastefully arranged, and the credit of Sheffield is worthily sustained by this young and enterprising firm. The jurors award them the "Gold Medal," and I fully endorse their verdict. Mappin and Webb have a good assortment of cutlery; I admit, however, if, in the grinding department of their best specimens, they equal those made by the old firm of "Arundel and Mappin," or the subsequent one of Mappin Brothers. Morton's case is one of which any one might be proud. Some of their razors are elaborate specimens of workmanship, both blades and handles. The aim of an exhibitor should be, while not despising ornamentation, to keep to the useful and cheap. The scissors in this case are good and elegant, and though bearing the impress "Morton," I think that they, as well as the razors, are made in Sheffield; I should guess the makers to be J. and Wm. Ragg. The British exhibitors exhibit no trash in this department.

The official catalogue defines cutlery to be—"Table cutlery, including knives and forks, spring-knives of all sorts, as pocket knives, hunting knives, poignards, scissors and shears of all kinds, razors, &c." Now, I regret to find that one branch of trade, in which we have almost a monopoly, was not represented. I allude to the wool-shear trade. It was almost a treat to see a pair of sheep-shears, and this was not confined to the British department. Either Robert Sorby and Sons or Lockwood Brothers could have creditably sustained the honour of Sheffield in this branch.

There are four centres of the cutlery manufacture in France. First, the "Puy de Dome," represented by the town of Thiers. This is the most important for the amount of business: the annual production, it is said, amounts to 18,000,000 pieces; these are exclusively cheap articles. The second centre is "Haute Marne," represented by the town of Nogent le Roi. It is here where the table-knife blades are made to supply the Parisian cutlers. Third, Paris. The manufacturers here are more famed for quality than quantity. Paris, in one respect, resembles London; work is put together there which is partly made in the provinces. The Parisian cutlers, though not numerous, display good taste, and, considering their facilities, they turn out splendid workmanship; this is the case especially in surgical instruments and sportsmen's knives. The other centre is Châtellerault, in the department Vienne. The productions are ordinary razors and table knives. The annual value of French cutlery amounts to about 20,000,000 frs., and by far the largest part of their productions is for home consumption. Thiers and its environs produce about 12,000,000 frs.; the department of the Haute Marne about 4,000,000 frs.; Paris, 2,000,000 frs.; and Châtellerault about 1,000,000 frs. The best cases of table and spring knives are exhibited by the Paris cutler. E. Plant, Rue Dauphine, shows first-rate specimens of sportsmen's knives, table cutlery, and razors. Charbonne of Nogent, displays a first-rate case of fine scissors, which, for variety and polish, are highly commendable. The same may be said of the scissors and razors of Malaingre Stanrengbi, Nogent. Sonmelet and Wichard, Conzelles, Haute Marne, exhibit good scissors, including specimens in various stages of manufacture; some of these are stamped in dies. A Frenchman endeavoured to introduce this method in Sheffield three or four years ago. Some of our leading manufacturers doubted its advantages, economically considered, and I believe the scheme has not made any progress. Lecollier, Nogent, displays a variety of razors in ivory and tortoise-shell, from 27s. to 42s. per dozen: razors, ordinary quality, from 12s. to 24s.; and "Rasoirs forme Anglais," 27s. per dozen. Hamon, Paris, shows French ivory razors (jimped), 20 frs. the pair; ivory, ditto (Messrs. Butcher, Sheffield), 15 frs.; and white bone, 8 frs. the pair. Chatelet and Cornet, Thiers, exhibit some really good forgings of blades and springs; the finish of their cutlery is far behind this first stage, especially the grinding. Robert and Collin show good cutlery, and surgical instruments first-rate. C. G. Marnasse, Paris, exhibits a good and varied assortment of table cutlery. Parisot and Gaudois, Paris, show good ivory table-knives. There are others who make a creditable display in French cutlery. For example, Mermillien Brothers, Prioué,

commune of Canon, Vienne, show good razors and table knives. Pingault and Co., Châtellerault, show table cutlery and razors, besides a piece of *ouïre* work, viz., a steel wheel, with two razors, two table and two other blades branching from the circumference. The whole shows how much labour may be spent without any useful result. They likewise exhibit table blades and razors in various stages of manufacture. These show, what I long suspected, that much work done in Sheffield on the stone is done in France by the file. A common class of cutlery is exhibited from Thiers. These have the merit of cheapness, even though the workmanship is rude. Sabatier Brothers, Bellevue, Thiers, along with finished cutlery, exhibit a number of "beds" and "punches," for "flying?" scales, blades, spring fleams, &c.; but whether they "fly" by hand, or water, or steam-power, I could not ascertain. In this case there was much to interest the practical workman. Deplanquais, Paris, exhibits good and varied pruning shears; and Happe, Paris, shows good pocket and sporting knives, and gardening shears, &c. Piault, of Paris, shows good table cutlery and superior razors.

Belgium has three exhibitors, who show a number of knives, remarkably low in price. The greatest defect is the grinding: the blades are rolled too much on the stone. They show table-knives from 2 fr. per dozen, and pocket knives from 1 fr. 25 c., about 1s. per dozen. There are signs of improvement in the Belgian department since the Exhibition of 1851. They copy our Sheffield patterns more closely than the French. Our "Norfolk" and "Wharfedale" knives are closely imitated. The gardener's knife (a "take out") is offered very cheap; pruning knives from 3 frs. per dozen. A knife, containing corkscrew, fire-steel, and three other articles, may be bought for 4 fr. "la douzaine." In cheap labour the Belgians have a great advantage over this country. One of the exhibitors announces his cutlery for exportation.

Sweden has three exhibitors, who show carved ivory daggers, and a small assortment of general cutlery, surgical instruments, and swords. English patterns are imitated. Heljestränd, of Eskilstuna, shows cutlery made of Bessemer steel. They look much like the make of Mr. A. Rotherham, Sheffield.

With regard to Prussian cutlery, Solingen (the Sheffield of Prussia) is represented by a good selection of cutlery. Schwarte has good razors and spring knives. "Two-ended" knives are more general from Solingen than any part of the continent. F. Herder, jun., exhibits good cooks' knives, scissors, tailors' shears, and elaborate pearl carving knives and forks, capped with silver. C. G. Kratz an elegant assortment of sporting, champagne, and other spring knives, ivory carved razors and table cutlery. The carving of the handles is elaborate. A large knife on the "lobster" principle shows this. The knife is quadrangular, and is a close imitation of one exhibited by Messrs. Rodgers in 1851. The principal difference is the Prussian knife is a "shadow," while that of Rodgers has "gold-mounted bolsters" centre-piece. The show of Prussia altogether does Solingen great credit. Russia displays a less elaborate class of cutlery. A. Banine, Novogorod, exhibits the best shears in this department. The grinding reminds me of Sheffield. Zuvialoff Brothers' (Novogorod) collection altogether is

useful, if not highly finished. The grinding of the penknives looks like Sheffield work. Are the blades sent to Russia as job blades? Blades and spring I know are sent. Austria shows a varied assortment of cutlery. In the finer qualities they do not rival either the French or Prussians. I did not see in the Austrian cases such rude specimens as they exhibited in London in 1851. They are certainly improving in cutlery.

Turkey, Egypt, Tunis, Siam, and the other countries need few remarks. They exhibit nothing likely to compete with English manufacture. Italy shows some small cutlery and surgical instruments. Santangelo (Campo Tasso, Molise) exhibits the most varied case, including knives, razors, and scissors. America has only one exhibitor in Class 20, viz., Biggs, of New York. Their cutlery is made by Booth, Brothers, Newark, New Jersey. The goods are of middle quality, and are solely English patterns.

So far I have confined myself to Class 20, "Fine Cutlery." There are other specimens in Class 40, as scythes, sickles, reaping-hooks, and machine knives. In scythes America sends the best specimens in the Exhibition. They are made by the Greenwoods' Scythe Company, and the grinding and finishing are excellent. Sheffield is entirely unrepresented in these branches. This is more to be regretted when it is remembered that scythes and sickles belong to the staple trades of that town. In tanners and curriers' knives Alfred Green sustains the reputation of Sheffield. In the grinding and finishing, the "Moon" knives are the best in the Exhibition. The French and Germans compete in this department; the blade edges, however, are often got up with the file. The smaller states of the Zollverein and France have many exhibitors of scythes, drawing knives, &c. In the manufacture of scythes on the continent more work is done with the hammer and less with the stone. Moritz, Hulenback, and Co., Schmale and Gross, both of Milspe, fairly represent the Germans. Their scythes are made with blades more concave than ours. After hardening and tempering they are "set" by hammering, and then rubbed instead of being ground. Prussia exhibits scythes, bay, and straw knives. The district near Hagen is represented by Gochet, Brothers, and Shennemann and Co. Austria is represented by an old firm, Martin, Miller, and Son, Vienna. Their collection contains machine knives, both for hand and steam power, and a good assortment of "spiral" cutters. In the French department Holtzer and Co. (Unieux, Loire) show good scythes. The upper side of the blade is concave, and ground across a small stone, which grinds the edge. The convex side is ground straight down.

Messrs. Coulaux and Co., Bas Rhin, show good garden shears, scythes, and sabres. On the whole the continental exhibitors show less variety and more rudely finished cutlery than either America or England. Then how stands this country in the industrial race?

In all articles which require a keen-cutting edge, as razors, table cutlery, penknives, amputating knives or scissors, Sheffield stands at the head of all her competitors. This position is attributable to excellent grinding. In this we distance both France and Germany. The worst part of their cutlery is the grinding, and this is a great defect, because, it must be remembered, that the use of cutlery is to cut; and,

after all, it is not "carved" handles or "gold mountings," but the blade which constitutes the knife. It may be asked to what we owe our superior workmanship in this branch? There are two reasons. The first is the length of time which grinding in Sheffield has been a district branch of industry—this has given us the benefit of experience; and, secondly, the superiority of our grinding-stones and tools. French grinding-stones are too hard. Those used in Paris are brought from Mareilly. The hardness gives the stones little cut, and often spoils the temper, and I saw no contrivance for keeping open the grit except "hewing." In grinding straw-knives, the workmen put rough sand on the stone to sharpen the grit. In grinding razors and table-blades they use no "flat-stick;" and instead of "lapping" they "wood-glaze" their razors and pen-blades. This accounts for the rough bottom in French fine work.

I saw no "dry grinding" in Paris. The division of labour, however, is less complete there than at Nogent or Thiers. Two cutlers informed me that the "dry" stone was not used in France. Razors are shaped with the file, a much less efficient form of labour than the dry stone. In table and spring cutlery much is done by the file which in England is done by grinding. The best table-blade holsters are filed, as could be seen where exhibitors showed the different stages of manufacture. Common "round tangs" table-blades have the holsters either "soldered" on or "tinned." Use in the restaurants soon shows this weakness; a good weld is far superior for durability.

It is only right to state that common cutlery is very cheap in France. This brings us to the question of prices. Is foreign competition driving the English out of the market? There is a great advantage in low-priced labour on the Continent. The efficiency of labour is with the English. This is owing to the extensive application of capital, which favours production on a large scale.

The cost of materials will be in favour of the English manufacturers in "first-class cutlery." The official catalogue says, "English cast steel forms about one-half of the material for the manufacture of Parisian cutlery." They must, therefore, pay the carriage from Sheffield and the import duties; these amount to 3s. 7d. on bar steel, on sheets 4s. 6d., and cast-steel wire, 8s. per cwt. In ivory, horn, and tortoise and pearl shells, the advantage is with us. My reason for stating this is that our Sheffield ivory and pearl cutters supply continental merchants with scales of these materials. Files are dearer in France (when efficiency is considered), or our Spencers, Ibbotsons, Tuttons, and others could not pay duty on files and sell them in France. Grinding stones are a little dearer there than in Sheffield, and, what is of more importance, they are much worse. This is not theory, for, remembering the old adage, "the proof of the pudding, &c.," I brought over a French stone to try, and this trial confirmed the opinion I had before formed. So far, England has nothing to fear. The division of labour is better carried out in Sheffield than in France; the conditions of labour, however, are different. In the former, piece-work is almost general, while in the latter more than 50 per cent. are day workers amongst the cutlers. As to the efficiency of the two there can be little doubt. Wherever "piece work" is prac-

nable, it is not only the most efficient, but it is the most satisfactory form of labour. In education the French artisans contrast favourably with our own, at least if those in Paris are fair specimens: and this is not confined to particular trades. The women are better educated than with us. The fact of numbers being employed as clerks astonishes the English, and there is no doubt that educated women have a mighty influence in the cause of domestic education. In "art education" the French have a great advantage over English workmen.

Trade associations and wages cannot be overlooked in a report of this character. Trade associations, similar to our trades unions, do not exist in France. Previous to 1864, strikes were illegal. Articles 414, 415, and 416 of the Code Pénal, 1810, forbid combinations to raise wages or reduce the hours of labour. The promoters of these could be imprisoned from two to five years. The same law forbids combinations of employers for the purpose of unjustly depressing the rate of wages (*tendant à freer injustement et abusivement l'abaissement des salaires*). As it is difficult to say what is an unjust depression, the employers escaped scot-free. This condition was altered in May, 1864 (*décret "Loi qui Modifie les Articles 414, 415, et 416 Code Pénal, Conditions."*) This modification of the law was preceded by a Commission of Inquiry, of which M. Olivier was the reporter. This report explains the alterations. By these, men are allowed to combine if they abstain "from violence, menace, or fraud." The law will not interfere with "strikes" or "lock-outs" until they assume a criminal character.

Before a trade meeting can be held the parties must obtain the sanction of the Prefecture of Police. At this meeting a public officer must be present, and if any political matters be introduced the promoters come at once under the prohibitory action of the law. The freedom of the workman is interfered with in his individual character by the "Livret." This is a book which the workman must show an employer when soliciting employment, to prove that he has fulfilled his engagements towards his last employer. The "Livret" could (by the law of 1851) be withheld by a master until the workman had fulfilled his engagements. If a man leaves his employer in debt his next employer must stop the sum (if not exceeding thirty francs) out of his wages. Again, the "Livret" is delivered all over the kingdom by the mayors (at Lyons by the Prefect of the Department, and at Paris by the Prefect of Police). The workmen regard it as a means of keeping them in political bondage, and, in the hands of unscrupulous employers, it may be made oppressive. Besides the things already mentioned, the "Livret d'Ouvrier" contains a full description of the bearer, and in travelling in search of employment he must present himself before the mayors of the departments for identification. If this is satisfactory the "Livret" receives the official stamp, and then the workman may seek employment. These things vexatiously interfere with the freedom of industry, and are foreign to the habits of Englishmen.

Other trade associations exist in France, as the co-operative societies. Many of these were formed during the revolutionary period of 1848. The state granted them eleemosynary aid: fifty-six societies received 3,200,000 fr. voted by the Constituent Assembly. Of this number

forty-two societies collapsed after a brief and precarious existence. There are others which yet show signs of vigour, as the "association des maçons," with 54 members, regularly employing from 200 to 300 men. I find no co-operative manufacturing amongst the cutlers, although another Sheffield trade is carried on in Paris on this principle, the "Association des Ouvriers en Limes." These file manufacturers have carried on business since 1848. Some of these industrial societies have tried the principle of allowing the men to share the profits. The maçons abandoned the system as impracticable, owing to the impossibility of reconciling the men to a share of the losses, when such occurred. Co-operative associations for production are numerous in France. There are 39 in Paris alone.

Besides the forms of co-operation already mentioned, there are others, on the principle of allowing the workmen to share a portion of the profits of trade. One of the most important is the iron foundry of M. Godin Lemaire, at Guise. About 300 men are employed there. The proprietor built, in 1859, a large house, with 250 separate lodgings; these are let to the workmen at a rental of three per cent. on the capital expended. M. Lemaire is now dividing this property into shares, purchasable by the workmen. It is intended to divide the manufactory in the same manner. The primary articles of consumption are furnished to the workmen at reduced prices. The social relation is most intimate in this establishment. The men are known by the appellation of the "Famillière de Guise."

How far these different societies can maintain their position against private enterprise remains to be proved. The moral advantages arising from the co-operative movement are worth all the cost. Whatever teaches habits of prudence, economy, and self-denial to the industrial classes tends to enrich the community. The elements of production, capital, and labour in England are too antagonistic. If the workmen, by co-operation, can successfully compete for profits against the capitalist, the triumph of labour will be complete, and the victory will be won, not by "railing against capital," but by contending against it with capital. The experiments being tried in France are especially interesting to the philanthropist. How far these associations have improved the moral and social condition of the operatives I am not prepared to say. The experience in France of a general increase of wages without trades unions conclusively disproves a statement, often made in England, "That without the protection of a union the workmen would be ground down, while they could not live." The motives which influence mankind are the same in France as here—they are a part of human nature. The general opinion is, that the social condition of the French *ouvrier* has been materially improved during the last few years. In a report of Mr. Fane, addressed to Lord Stanley (dated March 31, 1867), the following sentence occurs:—"The general rate of money-wages may be said to have increased about 40 per cent. in the last 15 years; but this by no means implies a corresponding rise in the real wages of the workmen. The rise in the price of money-wages has been accompanied by a considerable rise in the price of the ordinary articles of consumption and of lodging, so that the improvement in the

position of the labourer has been far from commensurate with the rise in the money value of labour. Still, the relative proportions in which money-wages and the price of commodities have risen, leave a margin in favour of the former, and to this extent there has been a rise of real wages, which enables the labourer to feed, lodge, and clothe himself somewhat better than he could 15 years ago."

Mr. Fane's report shows an improving condition of the labourer, and this has been obtained without those convulsive struggles which in England frustrate the calculations of the capitalist, and bring misery on the workmen and their families. I allude to "strikes" and "lock-outs." Altogether, there seems to be less antagonism between masters and workmen in France than in England. Through the kindness of M. Hignoullet, I am enabled to give the statistics of wages and the social condition of the cutlery trade in Paris:—"In 1849 there were 239 cutlers in Paris. In 1860 this number had increased to 285 men, 13 women, and 22 boys under sixteen, including apprentices. There were 4 employing more than 10 men, 64 from 2 to 10, and 179 employed 1, or were little masters. Of this 285, 172 worked by the day, and 113 were piece-workers. Of the women, 5 were day and 8 piece-workers. The wages were as follows:—285 men—19 got less than 3 francs per day, 28 got 3 francs, 38 got 3½ francs, 40 got 4 francs, 45 got 4½ francs, 71 got 5 francs, 7 got 5½ francs, 28 got 6 francs, 1 got 6½ francs, and 2 got 7 francs. The 13 women—5 got 2 francs, 2 got 2½ francs, 3 got 3 francs, and 3 got 3½ francs. The wages of the 22 boys were as follows:—Two, not apprenticed, 1 got 50 centimes (five pence), and 1 got 75 centimes; of the other 20 boys 11 got no wages, 4 got voluntary wages, and 5 got from 75 centimes to 2½ francs per day; the day's work 12 hours, with 2 hours for meals. Of the 285 men, 16 board and lodge with their masters; 215 live at home; 60 live in lodgings. 240 are well conducted; 21 doubtful; 21 bad. 261 can read and write; 24 cannot. Of the 13 women, 11 live at home, and 2 with their masters. All the women can read and write. Of the boys, 10 live at home, and 12 with their masters; 19 can read and write, 3 cannot. Of the 20 apprentices, 8 are engaged by contract, 17 without. Four are engaged for two years; 7 for three years; 8 for 4 years; and 1 for five years."*

I could not obtain reliable statistics of the other towns where cutlery is manufactured. The official catalogue says, "Manual labour predominates in this branch of industry, as the workman only makes one sort of article, and that always the same. He buys the raw material, and finishes the article himself. There are, however, some important manufactures where a certain number of mechanical tools are employed, such as stamping and cutting presses. In the centres of the great cutlery districts the workmen work at home, with apprentices living in the surrounding villages." This description leads me to doubt whether the divisions of labour are so complete as with us. The words would aptly describe the condition of Sheffield in the time of James the First. In reference to the "grinders' asthma," I was informed that, as a rule, the

* "Statistics of the Industry of Paris, 1860." Page 433. Collected by the Chamber of Commerce.

value of a grinder's life was 15 years less than that of men in healthy occupations. One man (a file grinder) told me he suffered at the lungs. Now, as the dry stone is not used in France, we may fairly conclude that the constrained position is unfavourable to health. Long hours of labour should, therefore, be exceptional. Where men grind by water-power the hours of work are uncertain. Whether the banks of the Durdelle are skirted by grinding wheels, like our Rivelin, Loxley, Porter, or Don, I cannot say; but, as the town of Thiers stands on a declivity falling to the Durdelle, such picturesque objects as grinding-wheels are extremely probable. I have before stated that, in fine cutlery, Sheffield has no rivals, especially in knives with sunk joints. In common, however, we cannot compete with France and Belgium. Cheap knives are made as a branch of "domestic industry." Trade is only an auxiliary to the cultivation of the soil; and, in cases where subsistence does not depend on trade, labour is cheap.

Common knives are made at St. Etienne and Noutron, in the Dordogne. These are now sold at from 3d. to 8d. per dozen. I bought two by retail in Paris for a penny; and for all the purposes of a knife they will surpass much common rubbish made in Sheffield. This may seem strange, but it is true, though the famed hardware town does now, as it did three centuries ago, make knives of "the best cutting edge." Some manufacturers, careless of reputation, send out "superior cutlery" which will not "cut;" they are like "Hedge's razors"—not made to shave, but to sell.

The conclusions I have drawn as to the relative position of England and other countries in the manufacture of cutlery, are as follows:—

We possess, 1st. Superior natural advantages, more especially good grindstones and a cheaper supply of coal and steel.

2nd. Abundant capital, which promotes economical production by the concentration of machinery in large establishments, and allows a better division of labour.

3rd. The extensive commercial relations of England give us the best markets for supplying ourselves with raw materials. This will be seen from the fact of our Sheffield steel makers having a monopoly of the best Swedish iron for converting into steel. As, for example, iron with the celebrated brand "Hoop L," can only be obtained through Messrs. William Jessop and Sons, whose experience as steel makers goes back to the last century. The very foundation of excellence in cutlery is good steel; and in this at present we stand unrivalled.

These are advantages of no mean character; and in the adaptation of them to the specific object of this inquiry we possess skill and industry unsurpassed. If the progress made by other countries seems greater than our own, it is because in the manufacture of cutlery we are much nearer perfection; and therefore it is impossible that our progress should be as marked as those emerging from a rude state of manufacturing. By the application of capital and skill we have won our position, and by the same means we must maintain it. But it is desirable that capital and labour should work more harmoniously together than heretofore. Although the progress of France has been remarkable, as shown by increasing exports and imports, their trade with foreign countries being

sevenfold greater in 1866 than it was in 1825, yet cutlery and hardware are not amongst the items of increase. In these branches of industry England has no cause to despair. The annual value of French cutlery is about 20,000,000 frs. (£8,000,000). Nearly all this is retained for home consumption; while England, besides supplying her own wants, exports above £1,000,000 of cutlery and hardware.

The amusements of the French artisans differ from ours. They play cards and billiards, and freely indulge in dancing. In athletic out-door exercises they are far behind England. The prevalence of day-labour does not leave the French workman the same freedom to indulge in out-door sports as is common with us. With a beautiful river like the Seine, it is a rarity to see a man rowing for exercise; and yet nothing would do more to counteract the effects of the abnormal position in which men like the grinders work.

In personal idiosyncracies the English and French workmen differ. An English foreman told me he could not get a French workman to use a very heavy hammer as efficiently as the British. The latter, however, were less tractable, and more tenacious of their own way. They dislike the irksome interference of the French laws, and often throw up their situations in disgust.

In concluding this report, let me ask, "Will the cutlery trade leave this country?" I believe not. If the cost of labour increases here, the material prosperity of other countries will bring about the same result. It has been shown that wages in France have greatly advanced. Now the normal law of industry is that the cost of production increases the price of commodities. In this respect England will not be in a worse condition than her competitors. Motives of patriotism should cause every Briton to cherish the interests of his native land. To secure these interests labour and skill must not undervalue capital as an element of production. Each has its rights and its duties. The diffusion of economic knowledge will cause these to be respected.

In order to maintain our reputation and position as "the workshop of the world," capital and labour must work harmoniously together, and when this desirable consummation arrives, I have no fear of the result. England at present occupies a proud position, and the combination of British enterprise, capital, and industry will maintain our manufacturing supremacy against all the world.

CHAIRMAKING, &c.

By BENJAMIN LUCRAFT,

CHAIR MAKER.

HAVING, by appointment of the Society of Arts, visited Paris, the International Exhibition, and some of the cabinet manufactories, for the purpose of reporting my opinion and impressions on an important branch of the cabinet trade, namely, chairs, sofas, settees, &c., I beg to give the following as my opinion upon the comparative merits of the manufacture of those exhibits in our own and other countries.

I have arrived at the conclusion that, with the single exception of France, but little or no progress has been made since the Exhibition of 1862. I will commence with the exhibits of the United States of America. I find two or three rocking-chairs, of no great novelty, and not the least pretension to beauty. Proceeding through Persia, China, Egypt, and Turkey, &c., there is nothing to call for remark until arriving at the exhibits of the Italian States, where some good light chairs are shown; also an excellent iron chair, exhibited by B. Biraghi, of Milan, for use in theatres, concert-rooms, and places where the economy of space is a consideration—a commodious, handsome arm-chair, 100 of which will take but a trifle more room than half that number of ordinary chairs. It need not be of metal—it may be made in wood, on the same principle. I will endeavour to describe its speciality. An iron frame, the sides of a Grecian pattern, the top and splat of iron; a frame of wood, fitted between the sides, the top and the splat stuffed, forms the back; the seat is a wooden frame, stuffed, and is attached to the sides by two bolts, on which it swings. The space is economised in this way:—You can place the chairs almost close together; there is no front rail, and the seat turns on the bolts. if a person wants to pass in or out, you rise, your seat turns, you step back in your chair, and the person can then pass.

Russia comes next, but exhibits nothing requiring notice. The same must be said of Sweden, Denmark, Greece, and Portugal. Spain has a few good chairs, that would be thought more of in a local exhibition. Switzerland exhibits several suites, one of great pretensions, but it is badly carved. Austria has a large suite, very costly, but spoilt by ugly curves and unsightly protuberances; also, chairs and sofas, made in steel. Wurtemberg exhibits a suite of black and gold, not first-rate. The same may be said of a number of chairs from Berlin. Baden has some good dining-room chairs. Belgium exhibits largely, but nothing worth a moment's consideration. I am surprised that the greatest part

of the exhibits from the countries I have passed through were not rejected altogether; there is not the least comparison between them and the two countries I have now to describe—France and Great Britain.

France exhibits a great number of beautiful chairs and settees, some of them so slight that to many they appear almost useless: yet they are so well constructed that their lightness gives strength by its elasticity; but the greater part of their chairs and sofas are of a very substantial, and many of a massive character. Yet you see no large lumps of wood to offend the eye. If a sofa is eight or ten feet long, they see no reason why the carvings on it should not be as fine as though it was but half that length. The same may be said of their arm-chairs. On them you may see carvings as chaste as can be found on a chair so slight that a lady may twist it on her finger. Not only are the carvings good,—the training is equally so; the curves and sweeps are perfection, and the upholstery most beautiful. And these chairs and sofas are not got up merely for the Exhibition,—they are the every day work of the Paris trade.

I went, with a party of English cabinet-makers, carvers, chair-makers, and upholsterers, over three of the largest factories, Messrs. Jeanselme, Fournier, and H. Rocault. We were shown over their warehouses and workshops, and the work, as a rule, was found equal to that in the Exhibition: not all so elaborately carved; in fact, some of the most luxurious sofas and easy chairs we saw had no carving at all, but were stuffed over.

I had intended to have given the names of some of the principal exhibitors in this section, but found that, to do justice, I must have named the whole of them; but, for the information of those who did not visit the Exhibition, I will describe briefly the styles that predominate in this section. The best part were reproductions of the Louis Seize, with the back and front legs turned, the mouldings of the rails, top, and feet carved with flutes, beads, and small leaves, and in the centre of the top, flowing over the mouldings, fine cut foliage, not of that kind of carving the intricacy of which is the chief feature, but more simple and less artificial-looking. There is no striving after effect, but, on the contrary, all the enrichments seem to belong to the places they fill; and, notwithstanding there is no part of the work that astonishes you, yet the whole is so striking and seemingly natural, that you are pleased beyond description. Most of these chairs are gilt; some are ebonized; others black and gold, or white and gold; also walnut, polished and partly gilt, and others partly black. The upholstery, too, is superb. Some seats have an oval or round medallion in the centre, with the corners closely tufted with tufts an inch apart, the centre of course left plain, to show the design; it has a very rich and pleasing effect.

One of the gems of the Exhibition was a Louis Quatorze arm-chair. No part of this was turned. The front legs were shaped square, the mouldings carved, the shafts panelled, and a shell with three or four backs carved in them, an elliptic front rail, a shell and foliage carved in the centre, the sides and back rail straight; the shape of the back square, to within about five inches of the top, where a bracket is formed on the outside of the back legs to support the overhanging part of the top rail,

the centre of which is an ellipse; the mouldings of the back are about an inch and a-half wide, having a bead on the edges, with the inside cut up into small panels; the splat, back legs, and lower part of the top are treated in this way.—the upper part of the top has a thumb moulding, richly carved; a husk on the edge of the top, over the back legs, finishes the corners. The middle of the top has some fine foliage, rising about three inches above the arch, and flowing gracefully over a finely-carved head. The front of the arms rests on a carved console: the sides and part of the front are panelled, and a leaf, springing from the top of the front leg, runs half-way up. The front end of the arm is carved with a similar leaf; a double husk forms the back end of the arm, one part running up the back leg, the other down the arm to the pad. This sketch will also serve for a sofa to match; the sides and arms of the chair will form the ends and arms of the sofa. This chair was gilt, and the back and seat covered in blue satin.

The next and last section is the British; and, without the least doubt or hesitation, yet with the most profound regret, I say it, our defeat is as ignominious, and, I fear, disastrous, as it is possible to conceive. We have not only made no progress since 1862, but, it seems to me, we have retrograded. The English chairs and sofas do not at all compare with the French in elegance, and are by no means superior in make. In the exhibits of some of our first-class manufacturers there is a kind of family likeness running through them, most decidedly English,—but English of the present day only, not in the least superior to what we have done in the past, and which will have no place in the future. I refer to chairs of a supposed mediæval character, exhibited by Messrs. Trollope, Holland, Lamb (of Manchester), and others, showing great poverty of design; one of the most striking features being round holes,—made and filled up again. Yet they have a slightly-redeeming quality—they are original; a mistake is better than stagnation; we may do something better next time.

Messrs. Trollope and Sons exhibit the best and the worst of this kind of chairs; they have also a good ebonized chair, but with, to my thinking, another mistake. I can understand and appreciate a man's cleverness who, having to make a chair without glue, should send his tenons through the feet, and wedge them on the outside with an ornamental wedge; but to make it with glue, and put a wedge, not for use but ornament, is quite another matter. I would we were above such tricks.

Messrs. Jackson and Graham exhibit some inlaid chairs, the workmanship of which it is impossible to surpass, but I think they are too stiff and formal.

Amongst the English exhibitors I give the first place to Ingledew. He has three or four good chairs, one with X-sides, with very good brass castors, reaching several inches up the front legs, adding strength and beauty to it; and a library or office chair, admirable in shape, and extremely comfortable to sit in, but spoiled by having the wood of the arms and other parts ground out, and pieces of leather put in its place; surely this is a great mistake: you cannot make a better ornament in leather than in wood; then why not let the wood remain?—I think it a very poor conceit.

A rather showy convertible ottoman, exhibited by Filmer, the only one of the kind in the Exhibition, and two handsome invalid chairs, by Ward, of Leicester-square, the usefulness of which I cannot speak to, bring me to the close of this part of my report. And now, after the most careful consideration, and with a desire to give an honest verdict, I am bound to repeat that in the race we are nowhere, and that France surpasses all other countries in beautifully-designed and luxuriously-upholstered chairs and sofas.

I have been as brief as possible, that I may, without taking your time too much, endeavour to give some reasons why we are behind; and after offering suggestions that may help us to the front in the future, I shall confine my observations to my own country and France, as the other continental nations are much below our own standard. Paris being the chief seat of this industry in France, as London is in England, the principal towns are influenced alike by the art-culture of both capitals. I believe all will agree with me that perfection in this branch of the cabinet trade depends more on a cultivated eye than other branches do; for example, the splendid cabinet-work in the English section, which, for workmanship, surpasses all others, as much as the French does in china and glass; yet this is done by rule, that cannot be departed from. Two good cabinet-makers, working from the same lines, will turn out both pieces exactly alike; if there should be a difference it will be in the workmanship, and not in the form; taste is not required to make a mitre any more than to shoot a joint—it is done by rule that cannot be deviated from; not so with chairs of an artistic character; the lines are only a guide up to a certain point, and from that point the mere workman stands not the slightest chance with the workman of a cultivated taste. The art-workman of France has a great advantage over us in England. In Paris they are surrounded by works of that kind, which none but the most obtuse can long remain uninfluenced by. Their museums and palaces are central, and most numerous; their decorations and furniture are of the highest order, and nearly always open to the people; even the Palace of Versailles, with its beautiful Louis Quatorze decorations, can be reached by rail as readily as I can reach South Kensington from my house at Islington. I mention these advantages the French enjoy, to show to those who think climate and our plodding race have something to do with our want of taste, that there are other causes. Do our aspiring artists take up their abode in Rome on account of the climate? Not a bit of it; there they are surrounded by works they venerate and love, and their very nature gets impregnated with them. But I do not want London knocked to pieces to make a city of palaces, that the people may acquire a taste for things lovely to the eye; still something must be done, or the working classes of this country will be grievously wronged, and the whole nation suffer.

Parliament has opened the ports of this country to the produce of all the world free, and a very large importation of chairs and sofas is the consequence, even whilst our own men are in want of work. I am aware that we export as well as import, but with this difference—the work imported is of an expensive character, whilst that which we export is generally of a cheap sort, the difference being in the labour.

For example, take £100 worth of chair-frames, such as we import from France; they would number about 100, averaging 60s. each; the cost of the raw material would not be more than 5s., leaving 45s. each for wages and profit. Now £100 worth of chairs that we export will be about 166, averaging 12s. each; the raw material would cost 5s., leaving but 7s. each for wages and profit. It is possible in this way to carry on a large trade; our merchants may grow rich, and boast of extraordinary imports and exports, yet a vast number of the working class be on the verge of pauperism.

I will now, in a few words as possible, offer two or three suggestions whereby this state of things may be altered, and the art workmen of England enabled so to improve themselves in matters of taste as to successfully compete with the now more fortunate workmen of France. In the first place the Council of the Society of Arts may use its influence with her Majesty's Government for the establishment of local museums of art manufacture, with lecture halls, libraries, and other necessary adjuncts and appliances for the use and instruction of the people, and open at such hours as will suit their convenience and opportunities for attending, which, as a matter of course, will be in the evening, when lectures by competent men would be largely attended, and I venture to suggest that the leading industries of certain districts may form their principal feature. In this way, if for the North of London a museum should be established, its position ought to be as near as possible the centre of its manufacturing district; and the most important industries of that district should be especially considered in the fitting up and the specimens to be exhibited. For example, to assist the cabinet-makers, carvers, chairmakers, and upholsterers of Shoreditch, Hoxton, and Lower Islington—where this trade is carried on to a great extent—good specimens of different styles and times in these branches would be of the greatest value; and in the adjoining parishes of St. Luke and Clerkenwell, where tens of thousands of the population are dependent on the trade of the watchmaker, the jeweller, the gold and silver workers, and all the various trades connected with the precious metals, examples of these, from the earliest times and from all countries, would be of the greatest interest and benefit, not only to them but to the whole nation.

Our pauperism costs millions annually; surely money spent leading to the remunerative employment of the people would be more than saved. In the meantime, whilst Parliament and the Government are arranging this, something may be done in another way. I think there can be no doubt that, in the 18th century, especially towards the latter part of it, art-workmanship had arrived at great excellence in this country, and that many of the works of that period are stored up in the mansions and castles of our aristocracy and men of wealth. What a splendid exhibition these would form, on a small scale, perhaps, as regards quantity, but if it can be brought about, I believe extremely great in results. Could this be done next summer, it may give an impetus to trade; and as an attempt no doubt will be made to improve the art-manufacture of England, that improvement might be based on English models.

There is another subject of great importance, that I wish to say a word or two upon. It is the apprenticeship system that obtains in

France. Having on other occasions, when in Paris, observed that lads of 14 or 15 years of age were entrusted with superior work to that of our lads in London, I determined to make the subject one of special inquiry, and while visiting one of the factories already named a good opportunity offered. Seeing some lads at work with the men in the carvers' shop, I went to the bench of one about 14; he was carving a chair back of a mediæval pattern, from a working drawing; it was nearly finished, and well carved. Finding, from inquiry, that he had done the whole himself, I expressed my surprise that one so young was found capable of carving so well, and was informed that boys at school are specially prepared for the trade they fancy, or that their friends have decided upon for them. So that a boy about to be apprenticed to learn carving is instructed in ornamental drawing, modelling, and designing. Three or three and a half years is the longest time they serve. It would be a good law for this country that prohibited the binding of any one for more than four years; our young men of 17 or 18 would then be better instructed than they are now at 21.

In conclusion, gentlemen, I beg to render my sincere thanks to you for the assistance given to myself and other working men for visiting the Exhibition, and the opportunity afforded us for offering suggestions whereby our own views may be made known, believing that the art-culture of the class to which I belong may be advanced and the nation as a whole be the gainer by it.

GLASS PAINTING.

By FRANCIS KIRCHHOFF,

GLASS PAINTER.

GLASS, clear and colourless, is a near approach of art to nature in the form of crystal, and is a beautiful transparent substance, composed of alkaline earths, or fixed salts and silica or sand, fused together at a great heat, and then suddenly cooled, to ensure transparency, for if it is cooled gradually, the different particles become solid and opaque at various temperatures. Sir James Hall discovered that glass loses its vitreous state and assumes that of a stone, if more than a minute or two elapses whilst it is cooling down from complete fusion to the point at which it congeals; after this it undergoes the process of annealing. Though the wonderful material was known and used by the ancients, in the shape of drinking cups, prisms, and coloured glass beads, it was not adopted for window purposes till about the middle of the 9th century; and Canterbury Cathedral is stated to contain the earliest on record in this country: the date has been fixed at the beginning of the 12th century, but the window glass manufacture was not commenced in England till 1557. Venice formerly supplied the whole of Europe with glass—the excellence of which is so justly admired—until as late as the end of the 17th century (as one old writer states the date), when England and France surpassed the Venetians in the brilliancy and colourlessness of their whites, and also in the transparency and richness of their coloured glass. The earliest application of colour to window glass was in the form of a transparent mosaic of different tinted glass. It was not till long after that painting (which is melted on the surface of the glass) was had recourse to, to give more distinct form and greater finish to the simple shapes that composed the pattern of the window. The painting consisted at first of a few bold expressive ornamental lines, afterwards figures of saints and bishops were represented, and a certain amount of flat relief given to them by the varied thickness and flow of the lines, and also by the addition of a slight film of brown colour, painted over and beyond the lines (thereby softening the hard lines into the clear glass); this constituted the commencement of painting on glass.

The early English style of the twelfth century affords interesting examples of this pure simple character; it is of a decided form, combined with gem-like effect; and there are some admirable windows executed in imitation of the twelfth-century style of work in the Exhibition, to which I shall have occasion to refer in the course of

my observations on all the painted glass that I noticed in that interesting place.

The same day that I arrived in Paris I went to the Exhibition, and inquired for Lieut.-Colonel Ewart, to deliver your card to him; I found an English sergeant who told me he (Lieut.-Colonel Ewart) was in London. The sergeant kindly conducted me to the British Workman's Hall, and told me Mr. Haussoullier was the gentleman for whom I was to inquire. On introducing myself to him, and showing your card, he courteously offered to assist me, and on the next day, at my request, he wrote a letter to a glass painter in Paris (whose work I had admired in the building), and he also considerably sent a guide with me. The establishment I had the pleasure of going over was M. Lusson's (21, Rue de Laval); and the kind manner in which he received and allowed me to go all over the premises was very gratifying. I had informed him on entering that I was a glass painter, in case there was any peculiar process he would not like a stranger in the same profession to see. (There are two separate glass decorators in London who possess ingenious machines for ornamenting glass, each of which is jealously guarded from inquiring persons; the lace-pattern is produced by one of these processes.) The first thing that struck me was the careful finish of the working drawings, or cartoons, drawn and shaded with black ink on blue-tinted paper, heightened up with white chalk in the lights. I noticed also that painting in water was more the system than oil, though when I asked they said they used turpentine colour on the top of the water, as is practised in England; they depend more on a needle point for removing colour off glass (to obtain lights) than on the brush or scrub, as it is technically called, the point process being a more artistic and engraver-like style, though taking a much longer time than the scrub; the colour itself they outlined and shaded with was similar to ours (oxide of iron or manganese with flux), but it was kept free from dust, &c., by being placed in saucers, covered over except a small aperture for the brush to pass through, whereas ours are generally exposed. A single figure or group being composed of a great many pieces of glass of different colours, it becomes necessary to join them together, temporarily, in an upright position, to make the lines run true, and to shade them; the plan adopted here is to lay them flat in their relative positions on a piece of plate glass, then to drop a cement, composed of beeswax and pitch, or resin melted, between the interstices, which, on cooling, fixes them firmly, and so they can be raised upright; but in Paris, at each of the establishments I visited, they leaded the pieces together to paint them, then took them out of the leads to burn the colour on, and finally leaded them up permanently; theirs being a more lengthy way, also the leads are in the way of the brush whilst painting, and the glass is liable to be rubbed in taking the work out of the lead; otherwise the system pursued was very similar. Their kilns for burning the painting on the glass were, in general construction, the same as those used in England: the glass is laid on iron shelves, which are covered with whitening; the door is fixed and bricked up, to keep out the sulphur fumes from the burning coke underneath. Whilst on Mr. Lusson's premises, my attention was called by a person to see their lead-

making machine; on looking I saw it was made by the London firm of Sharrit and Newth. I saw, also, among their glass, several tints that are not made or used in England, particularly a beautiful rose pink; it is very clear; and they possess a greater range of greens, which are invaluable for different tints of foliage in portrait-work. I was told they have some ruby (a flashed glass, resembling the gem of that name in colour) from England, as they consider it better than theirs: they also showed me a few samples of some magnificent new tints in glass, made by Dr. Salviati, of Venice (the same gentleman who has executed some of the mosaics at South Kensington and St. Paul's Cathedral). There was a piece of a church window leaded up; it was in the thirteenth-century style of work, and in it they had inserted pieces of a very common, fierce blue, not at all the colour of antique blue.

The glass is cut, too, on a different principle to ours, that is, there is a separate piece of paper, or cardboard, cut first the exact shape, from which the glass is then cut—a very time-wasting job; the method here being to make an outline from the cartoon the same size on paper, putting in lines to express the various pieces of glass, and where they join. By laying the glass on this drawing, the lines can be seen through, to which it is then cut. The same drawing also serves afterwards to lead or glaze up the window on; it is technically called a cut-line or lead-line drawing. Since my return, I have inquired and found there is an old establishment in the north of England where this cut-out paper pattern plan is adopted.

At M. Oudinot's establishment, which I also went over through the favour of M. Haussoullier, I saw some admirable drawings, exquisitely finished, and a grand portrait of himself, painted in a natural way, delicately tinted; also some splendid paintings in oil on canvas by him. The system of working was very similar to the other place I visited. M. Oudinot painted some of the windows in Notre Dame, which I visited. There are a few windows there that look remarkably new, so clear and modern in colour. The two large rose windows (circular) are filled with beautifully arranged glass: the south one is a superb bit of colouring (the very stone work is grand in its richness), and the north one, which is designed in a different key and colour, shows it has been carefully studied; for a northern light, being without sunshine, and a shady clear blue light, takes a larger quantity of yellow and red than an east window, which may have a large amount of blue judiciously mixed with white and very little green; for I think the old masters coloured their windows according to the light and situation they were to occupy. These two circular windows are very high up, but the effect of them, as seen from below, is most beautiful, and once seen not to be easily forgotten. The side lights in the body of the Cathedral are in great variety of design: some of the geometric and grisaille glass, containing a large quantity of white, look very elegant. The windows by M. Oudinot are exceedingly rich. Notre Dame being a 12th century building, I was rather disappointed in not seeing any glass of an early date. At La Sainte Chapelle every window is filled with stained glass, and gorgeous masses of colour most of them are, and of beautiful design. They are designed in the 13th century style, to harmonise with the building, which was

erected in 1248, but the interior, the walls, roof, and pavement are so elaborately decorated, that the effect is almost oppressive; the eye finds no clear space to give relief, and a strong Egyptian red is the prevailing colour. Although each window is different in design and colour, they form no unpleasant contrast to each other; and there is a capital mosaic effect to all, owing to the glass being cut up in such small pieces.

At St. Denis, I regret to say, I was not able to go over the cathedral; the interior was boarded off, in consequence of extensive renovations being carried on: some of the glass I caught a glimpse of appeared to possess a magnificently rich, jewel-like effect; but the splendid large rose window I was unable to see, except from the outside, where at least I could admire the beautiful stone shape of this large circular window; it is wonderfully fine, and yet is on such a grand scale. There is a church being built, in the 10th century, or Norman style, near the cathedral at St. Denis, and in it I saw some fine, effectively-coloured small lights, but they had not that grand simplicity of old glass. I was very much edified by seeing the painted glass in the churches in Paris, in one of which, I think St. Gervais, I saw some extraordinary good old glass: St. Etienne du Mont also possesses some admirable glass, which I should have liked to sketch. St. Sulpice contains also some glass more peculiar than beautiful. (I will not be certain about the name; I went into so many churches, and I have got muddled since as to their names.) St. Meni has some fine late glass of the perpendicular period. In one of the churches I was delighted to see a painting by Albert Durer, which I carefully studied, and would have liked to make a drawing of, not having seen a print of it. It is a large painting, in panel, divided by a painted cord into compartments with different subjects. I refer to this because some of the 15th century glass was similar in treatment, though not equal in grandeur of design, to this fine old master. At the Louvre there are magnificent specimens of German and Flemish glass; armorial panels; also some splendid old enamelled arms—Swiss work, I think. I saw many small panels and circles, painted in the style of Albert Durer, there, with the stiff, sharp, angular drapery. The Louvre is very rich in these old circles, which have evidently been painted for domestic decoration. At the Museum of Cluny there is some excellent 16th century work,—most elaborate work, exquisitely designed and painted,—half-a-dozen small scriptural subjects being represented on a piece of glass about a foot square; the clever freedom with which the figures are painted in being well worth studying. In a house in the Exhibition grounds there is a large circle of painted glass, with the subject of the "Nativity," painted in a pictorial manner,—a superb specimen of artistic enamelling. It is quite a work of art; it is modern Italian painting.

The French work, when compared with the English, shows a greater diversity of design in construction, and more freedom and grace in the drawing of the ornament, but in excellence of colour and pleasing harmony the English glass is much superior.

The German glass is more highly-finished than any except the Italian, and yet possesses but a middling effect; the whole surface of the glass being covered over with colour, there is no brilliancy; it is toned down

to a transparency effect, as if there was either linen or ground-glass behind it. (The new German window in St. Paul's Cathedral is but a flat, feeble window, without vigour or even a glassy effect; and yet the flesh is elaborately etched up with lines.) The German ornament, as applied to glass, is heavy when compared with the French. The having very large figures appears to be the usual method for disposing of most of the space in their windows.

In painting, the French affect a greater breadth of light and shadow; for instance, laying the whole of a foreground figure in shadow, with the exception, perhaps, of one or two edge lights—a bald style, not adopted here. But I noticed they also suffer from bad painting, the colour leaving the glass after it is burnt, making minute holes letting in the clear light. There have been many complaints in England from the same cause. It is supposed to be the inferior mineral colours corroding, after some time, through the action of the atmosphere on them.

I think there is not much difference in the cost of material in Paris compared with London, but, on inquiry, I found the wages were much lower, a good ornamental glass painter receiving but 4s. a day, a figure painter earning, of course, more than that—no stated sum—but being paid according to his skill. The conditions and division of labour seemed about the same as carried out here—the large, rough ornament being painted by lads, the ornamental patterns and tracery by the apprentices and ornamental painters, and the figures and subjects by those possessing a good knowledge of drawing, the designs and cartoons being made by the principal artist or master.

It struck me there was more freedom in manner whilst at work than is to be found here; though respectful, there appeared a certain amount of familiarity towards their principal. I noticed some smoking while at work. But I by no means wish to say such is the rule, about their easy freedom; it may have been but an erroneous impression received by a Cockney on his first visit to Paris, and so I should not generalise from one or two instances. As to amusements; whether glass painters are given more to spend their time that way than any other business I cannot say, but in Paris there seemed as much time devoted to pleasure as to work by the French.

FOREIGN GLASS.

The whole of the glass is placed far too high, and the spectator has not even the advantage of retiring from it a proper distance for its height, so is compelled to take a fore-shortened view of it; but the light itself is admirable, telling out, as the glass does, against the clear sky. In one or two cases the names of the artists are not underneath their windows; and in several instances the dark pieces of paper used to black the light out, round the heads and tracery of the window, have come away from the woodwork, and the strong light being let in at those places slightly mars the effect of colour. The painted glass, seen from so far below, can only be judged on its merits of boldness of design and colour, which is the principal thing to be aimed at in designing a successful window: for when a person enters a church the probability is a large painted window is the first object that attracts his eye, and this

impresses him favourably or not, according to the harmony of colour; and it is only when he approaches nearer to it that he is able to judge of the drawing and painting. For the reason I mentioned, it was impossible to see which of the three methods—viz., stippling, smooth, and smear shadow—has been adopted in the painting of all the stained glass in this section. A great deal of importance is attached to each peculiar way. A stipple-shadow is a series of dots, which, if properly managed, should not touch each other. This style of painting is the most transparent, as it allows the local colour of the glass to blend with the shadow. It is used for broad, bold work. The smooth-painting requires less colour on the glass than the stippled, as it intercepts the rays of light more effectually. This method is generally adopted in glass where high finish is required, or when the window is close to the eye, as, if skilfully done, the glass-painter's colour will appear like a darker tint of the glass. The third style—the smear—is a sort of compromise between the other two. It is mostly used for mediæval work. It is so painted that the brush shall leave the mark, or grain, as it is technically called, and not softened off as in the smooth manner. When dexterously executed it gives great richness to the glass. It must be finished off at one bold, decided, yet careful touch, as if painted over again it loses that grain which constitutes its merit. Some of the old windows exhibit splendid specimens of this treatment. It is to glass what the sculptor's tool-marks are to stone, or a wood-carver's chisel-marks to wood: it gives a sharpness and vigour to each material. There is also another method of getting shadow on glass—by etching it up with lines painted on with a fine brush—which, though it allows of getting a more correct form, combined with transparency, is not very generally adopted. There are some portions of the painted glass exhibited in different parts of the building, and in those cases they are comparatively close to the eye, and then the drawing and peculiarity of working can be carefully noticed.

For greater variety and graceful design in their arrangement of ornament, I think the French are superior to us, but for richness, and a more pleasing harmony of colour, I think the English glass painters as a body are second to none. The German artists are not represented so much as might have been expected, Munich and Dusseldorf containing some of the largest establishments. Also it was remarkable the small quantity of Italian work exhibited; but I will refer to each group to the best of my poor ability: and whilst I endeavour to describe and pass my humble opinion on the merits of the collection as it appeared to me, I hope I shall not express myself in a too-confident or presumptuous manner.

I will commence with the glass exhibited by Paul Bitterlin (Paris); some capital specimens of modern or domestic work; plate-glass, acided and ground to different tints in shadow, a method not executed in England, there being only one tint in ground-glass as carried out here; the design worked on a very large piece of plate-glass is the imperial arms, surrounded with some good mantling. A panel of flashed blue glass (coloured glass is either pot-metal, having the colouring matter thoroughly mixed with the glass in making, or flashed when it is on one

side only, and easily burnt away with fluoric acid), delicately and artistically acidied to form a bouquet of flowers by the different tints of blue. Several fine ornamental designs, painted and enamelled. A piece of ruby glass, acidied, painted, and stained (with silver, to make a yellow). A blue sheet, treated in the same way, but another pattern introduced on it.

M. Oudinat (Paris), a specimen of an early English style, light, fine purple effect: he has also a two-light window, containing six subjects, painted in stipple, carefully drawn and painted. A three-light window, designed in the 13th century style, representing three figures under canopies. In another place he shows a large three-light window, with subjects running through mullions; the lower subject depicts the death of some female saint, and the upper one her glorification, painted in a fine, open stipple, rather too brown in effect, but the window has a strong, bad light in front.

Ed. Bourrieres (Paris), a pair of small windows, with an ornamental pattern traced and painted on clear, white glass, ground. In the middle two female figures, roughly painted in ovals, back-ground deep blue: also some circles, coarsely done in the Flemish style, painted brown, for decorative purposes.

Erdemann and Kremer (Paris), two small squares, containing carefully-stippled portraits of the Emperor and Empress; also four subjects, illustrating education, finely worked up, in the style of the German glass, remarkable for the great variety of greens used in the foliage, &c.; they are four very interesting specimens of stained and painted glass.

M. Goussard (Gers), a large Resurrection, broadly and pictorially painted: good drawing, rich, quiet colouring, a fine impressive window, under a simple effective canopy.

M. Guignon (St. Denis), a sheet of plate glass, acidied and grained, technically called embossed, forming light and shadow to a beautiful piece of ornament, some blue borders, the blue glass cleverly burnt away to different tints with acid: and some more ornamental glass for decorative purposes, such as staircase or conservatory windows.

P. Nicod (Paris), an opening in the 14th century style, with a gorgeous mosaic appearance, harmoniously coloured: also two small modern ornamental lights, arabesque pattern, delicately traced and painted on a white glass ground. Satyrs at base of windows. A small window, acidied out of ruby glass, painted, stained, and fired, the pattern only ordinary. Two small figures, with pale blue back-ground: the figures are drawn and painted statuesque; they represent Melody and Harmony. A large circle, about five feet in diameter, subject the Nativity, after Perugino—a careful copy from his picture in the Louvre—painted on flash-glass and pot-metals, the leads cleverly managed—hardly perceptible: this circle is a superb specimen of good effective glass painting. Some graceful and novel designs for ornament, worked out on the glass in geometric shapes, painted and lined on white mat grounds. Also a square-headed window, containing a large female figure, typical of Slavery; figure life-size, well drawn, flesh and drapery softly stippled up, shaded without any positive lines, chaste green colour dress, novel effect produced by attaching with some cement (or else

burning on a piece of red glass, cut in form like a gem, on the surface of green drapery, to show as a jewel fastening the dress.

Andriot (Paris), some specimens of tasteful design on embossed glass; also some delicate patterns on white enamel grounds; some flowers, painted naturally in enamel colours on clear glass. The whole of M. Andriot's collection consists of modern, domestic, or decorative glass.

Facing the central garden, at the end of the gallery, is a large semi-circular window, divided into nine openings or lights; it is filled with stained glass by N. Coffetier (Paris), 14th century style of painting; figures very small, in subjects rather blue in tone, but of excellent design. The two end lights are more Byzantine in character than the rest of the glass, but have a very sparkling, jewel-like effect. Besides this large space, which I should fancy contains more than 500 feet of painted glass, M. Coffetier has another window in the 13th century style, with an early mosaic back ground, traced black lines, and no shadow; a brilliant appearance. A window in the 12th century style; whites seem too clear to harmonise with dark, full colouring; the general effect too red. Two more magnificent lights, with a remarkably good border, both in clearness of design and colour. Also a geometric window, the pattern formed by red bands on white traced ground; a light, handsome window. Also a set pattern on white ground, with blue bands; does not possess any special merit. A two-light window, with large figures in it, far too strongly shaded to balance the other portion of the ornament; two geometric pieces, blue quatre-foil shapes, interlaced on a white traced flowing-diaper ground; in the middle, figures on pillar pedestals, with shields attached to them. This collection of M. Coffetier's, which is the largest exhibited by one firm, is all of an early ecclesiastical character, but it appears to me to be more flowing in its curves, for 13th or 14th century work, than is generally executed here. In England, a greater stiffness prevails in the plan of arrangement.

Châlons (Toulouse) has a window in the Renaissance style, with figures of David and Moses: a superb example of this very rich style; design, drawing, and painting magnificent.

Eglispe (Amiens), a large window, representing the genealogy of the Virgin: figures, boldly and skilfully drawn, scattered over the window; a tendency to too much blue in the back-ground, but altogether a rich, pleasing window.

Guilbert d'Anelle has a three-light window; a Virgin in the centre, surrounded with yellow rays; St. Peter and St. Paul in the side lights; angels in niches underneath—coarsely executed, middling design, and bad, disagreeable colouring. Also, by the same firm, a single light, with figure of a bishop: treated in the 15th century style, like the Bourges class: large patches of unbroken colour—a poor imitation of a heavy, harsh style. Two lights, with figures under canopies, of a later period—the decorated Gothic—only ordinary glass. A large round-headed window, in the renaissance manner; subject, a little too blackly painted, seems opaque—good ornament, and capital arrangement.

Thibault's (Clermont) is another poor collection in quality, commonplace design, and not much taste shown in colouring, with outrageous drawing. It represents the Virgin and Child. There are four Norman

lights, that are very ably and effectively treated, coloured in the same key as old glass—fine purple effect; but there is a spandrel over them, that is coarse and crude in arrangement.

Mauvenay (St. Galmier) exhibits two openings, forming one window, containing figures of SS. Catherine and Cecilia, under well-designed canopies. Under the figures, in spaces formed by pedestals, are two subjects, illustrating events in the life of each saint. The whole of the window is pictorially treated in an artistic manner, the canopies being of white glass and not overshadowed; they are silvery and chaste in colour.

Lorin (Chartres) has a large window, well placed as regards light. It is a copy of Rubens's "Descent from the Cross." Regarded as a piece of painting or colour, it is grand, but viewed as a window is intended to be (to admit light), it defeats its own purpose. At a short distance from this window it appears extremely dark and heavy.

Lusson (Paris) exhibits an "Entombment," surmounted by a splendid perpendicular canopy. The drawing and painting of this window is one of the best examples of good modern ecclesiastical painting. Correct drawing, with enough sharpness to give crisp character, treated as glass, flatly, but artistically painted, no forcing up the projections by opaque shadows; the whole work is transparent and luminous. To paint on glass flatly and broadly, yet at the same time to obtain sufficient relief, is too often lost sight of in glass, as it is the only way by which the clear, brilliant glass itself, without any shadow, colour, or tint on it, can be obtained, for by the other way, where a high relief or rounded surface is aimed at, the glass must be entirely covered with colour except in the high lights, where only the glass is quite clear. Perhaps I shall make my meaning clearer if I compare it to a black chalk drawing on tinted paper, with a few white chalk touches for high lights. I was so gratified by seeing M. Lusson's work that I put his address down, intending, if possible, to go over his establishment, and, through the courtesy of M. Haussonnier, to whom I expressed my wish, I was enabled to pay a very pleasant and edifying visit to M. Lusson's studio. I also noticed another window of his in the Exhibition, a three-light window, in the early English style, subjects small (as according to style on a sparkling mosaic back-ground; rich combination of colours. In another part of the building he shows a three-light window, with the Saviour in the centre; the side-lights consist of ornament, white, flowing pattern, in the 14th century style. The Saviour is under a heavy, squat canopy, that is very poor in design, though perhaps correct for the period. The border round the window is not original; it is an old and well-known one, which also means often used. A large five-light window, subject, "The Genealogy of the Virgin," treated in a late style, the drawing free from the stiff mannerism of early work; figures in gorgeous drapery, seated on scrolls of flamboyant ornament, on rich blue ground, well broken up with different tints of blue to get uneven mosaic effect; Virgin very large, in the centre of the entire window; general effect rather too blue. Two side-lights, with medallion subjects, gentle in appearance, very successful in colour.

Nicolas shows a square-headed three-light window; figures in the 16th century, Italian costume, with a canopy over the subject too large

and overpowering in proportion. There is a violent coarse green in the base, under the figures, that spoils the effect of the whole window; above this there is a separate piece of tracery, with some neat ornament, brightly coloured. A circular-headed window, in the Renaissance style, representing Michael Angelo surrounded by celebrated artists; figures remarkably well drawn; very broadly and flatly painted, with very little shadow. There is a splendid arrangement of different greys of glass in the architecture, which fills up almost all the back-ground, but there is a want of one or two broad shadows on the architecture, and at the feet of the figures on the pavement; the general effect is rather busy.

Gaglet (Paris) shows a three-light window, the "Genealogy of the Virgin," boldly designed; blue ground; figures well balanced for colour. A very fine window: a small panel, with a female figure representing an Egyptian, with Egyptian architecture in the back-ground; modern treatment.

Didron (Paris), a large four-light window, with about one hundred figures in it; some procession, in the 15th-century style of dress; at a short distance off it looks extremely like an old 17th-century window; a vast amount of work in it, but not pleasing—of the oppressive sort. A two-light window, with subjects of the "Nativity" and "Sermon on the Mount," the mullions dividing the subjects; flamboyant ornament on blue ground; the drawing and grouping of the "Nativity" exceedingly clever; a very rich and impressive window. Also, two capital pannels, in the early style, clear brilliant glass, bold-telling pattern, finely coloured.

Guerithault (Poitiers), a "Virgin and Child," in vesica shape; flesh very much over-painted (opaque); a very queer work of art. Also, a charming medallion; subject, "Virgin and Child, surrounded with Angels;" pretty, but not grand or masterly. A large circular-top window, scroll ornament on white ground surrounding small square panels and circles in dark colours, inclined to be feeble in effect; a want of leading form in construction of ornament.

Geyling (Vienna) has a window of four openings, with a large figure in each, finely drawn, and painted figures on an intense blue ground, which, combined with very sharp green crockets in the canopies, spoil the otherwise good effect of the whole window; the ornament is too poor for such well-executed figures.

An exhibitor from Junspruck shows a chaste and superbly-coloured "Virgin and Child," under a magnificent canopy, highly decorated, surmounted with angels; the whole window worked up to unusual softness.

Laurent (Paris), a large window, five lights; "Benediction" subject, painted in stipple, sombre colouring; grandly treated. A large four-light window, given by the Emperor of Austria; a strong blue used in the figures; ornament bad and coarse.

There are some carefully-drawn cartoons, for stained glass, in the French court, exhibited by M. Lamotte, Paris. At the entrance to the collection of Belgian paintings, in the building in the grounds, there are two windows, consisting of three lights in each, one window each side

of a doorway under a portico, which, in my humble opinion, are as bad and inferior to the rest of exhibited and painted glass as the pictures inside this building are equal to the best in the Exhibition. These two worse than middling windows represent three Apostles in each, under hard, clumsy canopies, crudely coloured, the drawing without any proper character, the painting harsh, and not transparent.

Dr. H. Oidtmann (Aix-la-Chapelle), exhibits, in a private room, a window, representing the "Angel appearing to the Virgin," elaborately painted. Splendid artistic effect, but no brilliancy of glass; it is more like a very successful transparency than glass. Another window, with a full-length portrait of the Emperor of the French, in court dress, painted in a pictorial manner; extremely clever, but not suitable for glass, being quite black in the shadows,—quite impossible for any rays of light to pass through; the general effect of the window is dark and opaque. Another window,—three lights, with the subject of the "Ascension of the Virgin," has a rich, pleasing, bold effect. Also a three-light window, a king sitting in judgment, under a magnificent flamboyant canopy. A window, with three openings, in perpendicular Gothic style, with figures and pedestals under, in good proportion; the spandril, or tracery-piece over the lights, is not at all in keeping with the style or manner of the rest; it is very flat and poor.

In a chapel built in the park the windows are all full of stained glass, some of them being superb; they are more modern in their treatment than painted glass is usually executed for churches. In several of the houses in the grounds painted glass is shown. There is one containing specimens of decorative glass in great variety. There is more freedom and fanciful design shown in the embossing, enamelling, and engraving on glass than is carried out here. The house illustrating the architecture of Tunis contains some stained glass (not painted), arranged in a very rich, harmonious way; it appears to be fixed in zinc frames, and produces a splendid jewel effect.

THE ENGLISH COLLECTION.

There is not such a large collection as might have been expected, some of the largest firms not exhibiting at all, and but very few of the provincial ones. Of the London firms, Messrs. Clayton and Bell, Messrs. O'Connor, Mr. Warrington, Messrs. Gibbs, and several other minor ecclesiastical glass painters, are not represented at all; and I think not a single modern or decorative glass painter exhibits, which is a great pity, for some of the English enamelling would bear a favourable comparison with the French. Foremost among the country firms, whose name and work are absent from the Exhibition, stand Mr. Wailes, of Newcastle, Messrs. Pilkington, of St. Helen's; Chance, Birmingham; Bell, Bristol, besides many others.

The English glass is exhibited all on the left-hand side (entering) of the gallery. The first is by Messrs. Ward and Hughes; it consists of four separate openings,—“Entombment,” and “Saviour appearing to Mary in the Garden,” under canopies, a “Nativity,” and “Resurrection,” with angels bearing scrolls in tracery, the “Saviour” in the centre spandrel. A large five-light window, delineating different subjects.

"Christ Blessing Little Children," in the middle opening, all under glazed canopies; at the base of the window pedestals to harmonise with canopies. A large panel, representing "Christ in Majesty," surmounted with angels and cherubs; a remarkable piece of colouring. The aim in this glass has been to combine correct drawing with brilliancy of glass; and it is with pleasure I have to record that the jury awarded a silver medal to Messrs. Ward and Hughes.

Hardman (Birmingham) shows a window of four openings, illustrating the Adoration of the Magi, treated in their peculiar Mediæval style, with splendid perpendicular canopies. Though not correct in drawing, there is fine angular character, which is preferred by many, as most suitable for a Gothic building; very slight shadow, and, though too far off to see details, it appeared, by the diapers and other ornaments, to be carefully finished. Messrs. Hardmans' glass generally is noted for large quantities of white glass used in windows, thereby giving a clear silvery effect, rather than gorgeousness of colouring.

Lavers and Barrand (London) show a square-headed window—subject, "The Crucifixion"—treated with much mannerism; canopy over, with good crisp character. Also a large "Ascension," in three lights; semi-circular rays of light dividing terrestrial figures from celestial; quaint arrangement and drawing, but splendid glass used in colouring. An armorial light, with shield on white ground; also a mosaic window, with remarkably small pieces of glass beaded in—too heavy in the colour of the glass to form a pleasing window.

Baillie (London) exhibits a very poor window, with a glaring yellow canopy; also a window with two openings—subject, "The Saviour calling the two Apostles"—this is in a rich, broad style of painting and colouring.

Heaton, Butler, and Bayne (London), a large window of eight openings, four long lights divided by transoms; subjects in square shapes; variety of tinted whites used; groundwork in glazed squares, with thin traced pattern on it, treated in a late style; brilliant and carefully selected glass in it. Also a five-light window, in the perpendicular style. Mullions divided by transoms finely coloured, but the drawing and arrangement of subjects too confused to be understood what they represent; the appearance of subjects is dark patches of colour, which yet harmonize with the rest of the window.

Edmundson (Manchester), a window of three openings, representing the Ascension: figures extremely bad, both in drawing and painting; profusely ornamented; the window, as a mass of colour, rather interesting. Also a four-light window, with eight separate subjects; arrangement of proportions good; striking glassy effect, though bad, coarse drawing; painted in the perpendicular, or 15th century style.

Field and Allen (Edinburgh), a square-headed ornamental light, designed in the Greek style; good, bold, telling, classic forms, richly coloured; pure antique and elegant shapes.

Costier (Glasgow) has a magnificent ornamental window, in the renaissance style: in the centre, arms on a fanciful shield; splendid design; ornament free and graceful; well-proportioned columns, with a richly-decorated pediment at top, surrounded with cupids; superb harmony of

colours. This window, in my estimation, is the finest ornamental window in the Exhibition. I heard its merits were recognised by the jury, but as there is no notice attached to any of the glass, I am not aware what the award is.

Dury (Warwick) shows eight small lights, with subjects pictorially painted: not sufficient decision of outline for church windows, though it is in the ecclesiastical style; well coloured and painted, but the drawing is too full and curved; it is something in the manner of a bad German lithograph print.

Forrest (Liverpool) shows a single opening, with a grandly-drawn figure of David, under an extremely good canopy; great breadth of light under the figure; powerfully painted on a blue back-ground, broken up with white stars. This is a wonderfully good window, both for design and colour, and anyone that noticed it could not but be struck with the impressive grandeur of the figure of David. It is in a very late style of work.

Cox (London) shows a three-light window, with three events in the life of our Saviour—the Birth, Crucifixion, and Entombment, and canopies over them; the design is but ordinary: and though the window possesses no great beauty, there is a good sparkling effect. Also another three-light window, with exceedingly high canopies, which, though elegant in themselves, yet from being too large and overpowering from the subject underneath, appear very much out of proportion for the size of window; they are drawn in the perpendicular style, and the subjects are puny and feeble, and seem like dark spots, so small that there is a difficulty to discern the composition.

Cludet and Houghton (London) show a three-light window, the Saviour in the centre one, and two Apostles in the side ones; over the figures are short, squat canopies, in debased 17th century style—not remarkable for design or painting, and crude in colour. Also a three-light window, with the "Ascension," under a cold white canopy of bad proportions; the subjects similar in style to some of the scriptural prints. In this window there is an admirable balance of colour.

Townroe (London) shows an immense, round-headed window, in the renaissance style, principally composed of Roman architecture: the lower portion the Arts and Sciences, small groups in panels and circles; not a very impressive window; great want of relief in the projecting portions of the architectural arrangements, and not sufficient distinctness of masses of constructive form.

Newman (London) has a small figure, treated in a mosaic way, with ornament over it and below; as this is placed exceedingly high, it is impossible to see it properly, but it appears to have little or no paint on it.

Lyon (London) has a figure of David, in sombre colouring, amounting almost to dreariness; white glazed square ground, with circular pattern traced on it: a peculiar window. I intended to have made sketches, to give the general plan of some of the more striking windows; I had commenced to make sketches, when I was told by the police it was against rules, and therefore not allowed.

I wish, before finishing this weak report, to express my gratitude to

the Council of the Society of Arts, through whose liberality I was allowed to spend a very pleasant and highly-edifying visit to the Paris Exhibition, such a visit being more improving, perhaps, than several years of study ; it must necessarily enlarge one's ideas, and suggest a greater range in the treatment of the work ; and I feel a hearty pleasure in recording my thanks for what will always be a pleasant recollection.

WOOD-CARVING.

By JAMES MACKIE,

WOOD-CARTER.

AMONG the many applications of industrial art, wood-carving takes so prominent a position, that it naturally attracts considerable attention, and is deserving of careful study. Wood is very largely used for interior purposes, and, however good the architecture may be, or however excellent the construction of articles of utility, it is admitted that their value and beauty are much increased by the addition of carved details. The present age shows that this art is popular, and industriously cultivated; and where excellence is not seen, there are signs that promise great excellence in the future. Exhibitions—local, national, or universal—have the great value of showing the condition and progress of this art, and this last and greatest Exhibition has opened a large and deeply interesting volume for our instruction. Paris at any time is interesting as a field for study, and for an exhibition of this kind it is specially adapted. The English workman is deeply impressed with the many beauties to be seen there, and he is made to anticipate the great display that awaits him in the Palace of Industry.

In the Exhibition we have some of the finest productions of industrial art in the form of wood-carving; and it may be said that all the nations that contribute, have, with a laudable ambition, sought to excel. These differences, and the various merits of the works, it will be my duty to point out.

It may be well to state that carving proper may be defined as consisting of—1st, the idea or conception, which is generally called design; 2nd, the drawing; 3rd, the modelling; and 4th, the carving, or manipulation of the material itself. For ordinary purposes the terms *design* and *carving* are perhaps sufficient, but the other distinctions are useful, and will be freely employed. In some instances architectural design is almost inseparably connected with the ornamental portion, but, for obvious reasons, will be touched very lightly.

FRANCE.

The well-known artistic character of French work induces us to expect good examples from the workshops of France, and there is no feeling of disappointment, for the successes are numerous, the glory great, and the rewards nobly earned.

In the front rank of the exhibitors in Class XIV. is M. Fourdinois,

who has done great service in upholding so handsomely the art of wood-carving. His elaborate and costly works are such unquestionable triumphs in the art that they will compare with the productions of any period. It may be hinted that in this instance the works do not surpass those of former years; and if true this takes nothing from the great merit of the present exhibits. The walnut cabinet is assuredly a work possessing many beauties, and of rare excellence. The style is modern French, which this establishment excels in. The elevation is good; the design is very beautiful, and consists of figures and ornament in great profusion. The friezes, panels, and figures being beautifully drawn, and modelled with great care, whilst the carving has received a high and pretty finish. The two sphinxes, that serve as supporters, appear to have the anatomy much too forced, but the whole is, nevertheless, a work of genuine and beautiful carving. The ebony cabinet, with carved and many-tinted pear-tree inlay, in the same style of art, is certainly a masterpiece. Like the walnut one, its details are so perfect, that, were it divided into a thousand pieces, each would be a model and a treasure. The caryatides, representing the four quarters of the globe, are exquisitely modelled and carved. The boys, in the spandrels over the arches, are very pretty, and the bas-relief in the centre panel is scarcely to be surpassed for its high-class workmanship. The bold experiment of using a number of various tints on the carving is far from successful, and the use of box-wood for the figures and panel gives the work a blotchy appearance, but as this relates more to the general conception than the carving, the great merit of the latter is not affected by it. It must be pronounced a work of wonderful beauty. The carved and gilt bedstead, style Louis XVI., is a work of great excellence. The festoons of flowers decorating the canopy are admirably carved examples of this speciality of French workmanship. An excellent console table, and some well carved and gilt glass frames, complete a display that ably sustains a great reputation.

Lemoine exhibits an ebony cabinet, so distinguished for the beauty and elegance of its proportions and carved details, and giving such complete satisfaction, that nothing is left for the most fastidious workman to desire. The structural form is so excellent, that, without ornament, it would command admiration, but it is artistically clothed with beautiful ornament; no part is obtrusive; nothing bad; nothing is wished absent; the total result being a most complete and enjoyable work. The caryatides supporting the cornice are remarkable for elegance of drawing and good modelling, whilst the carving of the whole is highly artistic. This firm also exhibit a plain walnut cabinet, with gilt incised work; there is little more than drawing, but it proves that a pleasing effect can sometimes be obtained by a simple, and therefore comparatively inexpensive, method of decoration.

Gueret, Freres, have largely contributed; and when it is remembered that some years ago they worked as journeymen a short time in London, it is with great pleasure we find that their industry and talent have met with such marked success and acknowledgment. Their ebony bookcase is an excellent example of this useful class of furniture, and takes a place in the front rank. Its thoroughly modelled and well-carved figures, its

ornament carefully distributed and adapted to the structural form of the design, and the masterly artistic renaissance carving render it a model for study. The walnut cabinet is a choice work in renaissance carving, having some of its ornament so prettily designed and worked as to be a model for any class of art-workmen; it is worthy of a prominent place in a home of luxury and taste. There is also a very beautiful cabinet in ebony and ormolu, with boxwood plaques of figures in bas-relief; the style is Neo-Greek, and is treated with great taste and care. The clasps on the panels of the doors run very prettily into incised work, and then terminate in brass inlay. The work is very chaste indeed. The walnut sideboard is a broad, handsome piece of furniture, with a bas-relief panel at the back, representing Diana reclining beneath the shadow of an oak tree, a stag's head at the top of the back, and some very pretty drops of fruit on the pilasters of the pedestals; there is great breadth and a beautiful harmony in this work, and the design and carving are equally well done. Two pages, as candelabras, in walnut, have much spirit in the conception and cleverness in the execution; the pedestals are decorated with well-carved renaissance ornament, and the dress of the figures is picked out in gold with pleasing effect. A barometer case in lime-tree, in the Louis XVI. style, is carefully carved. These works are distinguished by simplicity of character; the special style is renaissance, treated with great softness, with fair projection, and as belonging to the works they adorn. All is conscientiously and carefully done, and the Gold Medal and the Cross of the Legion of Honour are fit rewards for the merits shown in so unique a collection of art furniture.

In a cabinet by Kneib there is some good carving, and also in a sideboard by the same, with a head of a fox in the centre of the back very well carved.

Richsteadt contributes a large walnut cabinet. The style is modern French, with a broad and Greek feeling, but it is peculiar and somewhat poor.

In the ebony cabinet of Gerson and Weber the large walnut panels are far from pleasing, being out of proportion with the structure, and are therefore obtrusive, and wanting in the always-desirable quality of harmony.

A casket, in pear-tree, carved from a single piece, displays some excellent workmanship. The boys on the top are good, and there is some neat ornament, but the design does not reach the same high mark as the carving.

A cabinet of a very superior kind is exhibited by Sormani, having a profusion of good and highly-finished carving. It is a fine example of modern French, and, like the works of M. Pourdinois, merits great praise and will reward careful study.

The large ebony bookcase, by Jeannelme, has Greek ornament well subordinated and severe. The general effect is pleasing, but the actual carving little more than common-place.

Bertand, Freres, exhibit a large bookcase, showing some freely-modelled carving, consisting of a shield and brackets in the cornice. The amount is small for so large a work, but it is good in design and execution.

In the exhibits of the firm of Racault there is a bedstead and wardrobe in the renaissance style. The carving is principally purple-wood, and the panels consist of ebony inlaid with ivory engraved. The design of both these costly works is very good, and the ornament is carved with great taste and care. Their large and somewhat elaborate ebony bookcase, in the Renaissance style, is substantial enough, but fails to please when in company with so much of the prevailing and popular French carving. The Louis XVI. console table, in lime-tree, shows some very well-carved ornament.

Two candelabras of sauns holding up boys who hold branches for lights, exhibited by Allard and Chopin, are modelled with great spirit, and are well carved. Also a console table, in lime-tree, of excellent design: style, Louis XIV. The supporters are well-carved female figures, and the top has well-carved festoons of flowers, looped around in a very graceful manner. The ebony sideboard is not so fortunate, for the pear-tree panel of plovers and snakes at the back, and the fox and partridge among the corn at the top, although spirited, is wanting in that refinement and finish that is seen and admired in so many other instances. A very beautifully designed coffin, Louis XVI. style, having panels in pear-tree, of figures and ornament, very sweetly carved, affords much pleasure to the admirers of this beautiful style.

E. Knecht exhibits his elaborate and very beautifully-carved group of "The Hare and Partridge," with accessories of branches of oak foliage. Unfortunately, he has been ill-advised enough to make it the centre portion of a very plain piece of furniture, which makes it seem out of place. It is a beautiful example of this class of wood sculpture, but its highly elaborate character is best appreciated when it stands by itself.

The bookcase and chimney-piece by Mazuroz are large and broad examples of good average French carving. The antique bedstead is, however true to the period, much too coarse to please any except the admirers of those manufactures that find too ready a sale in a well-known street in London.

Sauvrezzy has an ebony cabinet, with some well-finished ornament in the panels.

Seney contributes a very pretty renaissance bookcase.

Brulant has a walnut bookcase, plain in character, with a small amount of neat and good carving.

Depont shows a very pretty renaissance cabinet, in plain oak, with stone panels; the carving is delicate and good, but the stone portion has more feeling and a better finish.

Lanneau exhibits a pretty, small Greek cabinet.

Quignon displays a large and showy work in walnut, picked out with gold. It consists of the whole side of a room with a sideboard in the centre, over which is a well-painted forest scene. The small drops of fruit in the panels are very good; indeed, altogether, the carving occupies a pleasing though quiet place in this well-designed work.

Wirth, Freres, exhibit a number of articles of carved furniture, and fancy carvings in abundance. Carving is profusely employed in all these works, and in many instances quantity has been aimed at more than quality: still, the enterprise of this firm, as shown in these numerous

productions, invites our most particular attention. We have elaborately-carved sideboards, cabinets, tables, clocks, candlesticks, candelabras, pedestals, vase-stands, spill-cups, inkstands, letter-racks, carte-de-visite frames, match-holders, caskets, and a variety of things of utility and ornament. Ingenuity and art combined are thus employed to meet the public taste, and in so doing enlarge the field of labour. In criticising these productions, we may pronounce much of the work rude in conception and coarse in execution, but it is certainly calculated to make the art still more popular. Some of the larger works are tolerably fair, and if not in such good company would pass with approbation. There is much that is suggestive in them.

Pirot exhibits an expanding dining-table, with four boxes upon the plinth; exceedingly well carved. The carving on the billiard tables is very fair, showing variety, and neither bad drawing nor unsightly carving.

There are several well-designed and carved chairs, by Pecquereau, a settee and some chairs being noticeable as having been carved in the white. This has been well done, and, the gilding being equally good, the effect resembles good ormolu work.

Gallais has several very pretty chairs and a settee, designed and carved in most excellent taste.

The gilt tables, and glass and picture frames are all carved, but do not generally possess the merit that is shown in the furniture.

Scarcely anything has been said about the honours received, but they are numerous and well earned. It is plain that the carving in most cases has helped the exhibitors to obtain their rewards. Doubtless the merits of the general designs have proved to be of the first importance, but the carving, embracing as it has done the most artistic powers of the producers, has been the secret of a great success.

The carving of the French is not equalled by other nations. Design, as shown in the plan and construction, is of the best, so that, carving and good design being thus intimately associated together, we have the essentials of good work. Something good is found in the productions of other countries, but in no other do we find so much that is excellent, such correct principles, such a love of the beautiful, and a successful carrying out of the feeling of taste to its final issue. Good carving here finds its best exponents, it will live here if anywhere, and to it we must look for much that will guide and encourage us in the future.

ENGLAND.

The works that we exhibit are not numerous, but several are conspicuous for elaborate and costly carving. In the exhibits of the leading London firms there is ample evidence of an anxious desire to rival the best examples of industrial art as applied to furniture of the highest class. It would have been a great pleasure to have said that the works of our country in this branch of art were as successful as they were intended to be, but, when judged by a standard brought up to a very high point in the Exhibition itself, it must be confessed that the day has yet to come which will see our exertions crowned with that success that all desire. If it were permitted to judge of some of our examples by a

process of breaking them into numerous pieces, very high praise might be awarded.

Wright and Mansfield exhibit a cabinet in satinwood, with beautiful marquetry panels, and carved and gilt ornament. It is in the Adams style, and is deservedly admired for its beauty and excellence. It is admitted that the gold medal has been well bestowed. No carver, however, could be found to say that the medal has been given for the examples of his art that are to be seen on this beautiful work. The cabinet work is doubtless good, the choice of veneer also, but the jury would see that the general design was so successful that its equal could not be found elsewhere in the English section. This peculiar instance of marked success is a lesson to us that should not be forgotten.

The firm of Gillow exhibits a large and substantial sideboard in walnut, loaded with carving. A different, and, one may venture to say, a better design would have shown the carving to greater advantage. In this instance the first impression is a bad one, and first impressions are often too near the truth to be removed or even modified. It is impossible not to look across the avenue at the ebony cabinet of Lenoire, and feel that in the one case the design and carving are equal, and go hand in hand, and in the other much is wanting, and that too in the plan or design principally. There is some very good carving in the work, but you have to seek for it; there is an excess in a given space, and that which strikes the beholder is expressed in the one word—confusion. Similar remarks may be applied to the ebony cabinet. There is undoubtedly some good carving here, but the *tout-ensemble*, as the French carvers call it, has many drawbacks, and we look in vain for that high class of excellence that we have a right to expect. Simplicity and clearness of meaning might have secured another kind of medal. The walnut wardrobe has four circular, well-designed, and carved panels, in pear-tree, consisting of flowers and foliage representing the Seasons. There is much care and a nice feeling shown in them, and they are certainly among the choicest specimens of English carving. The boxwood cabinet, with very beautiful marquetry panels, possesses some carefully-executed carving.

Jackson and Graham exhibit a cabinet in ebony and ivory, engraved, of wonderful beauty. The carving is very good, but subordinate, consisting of caps to the pilasters, and clasps on the panels, the excellence of which would have been much increased by a little softness of treatment.

Trollopes exhibit a large and massive walnut sideboard, and though the general design is broad, and the carving well distributed, there is a manifest absence of that artistic quality that this firm was expected to present to us. The work has a character which places it above similar once exhibited by some of the other nations, but some of the details are deficient in careful drawing and thorough modelling. Two panels of boys' heads, surrounded with foliage, in one of the ebony cabinets, have a French feeling, and are excellent examples of carving. The other cabinet has nothing on it by any means so good.

Holland exhibits an oak sideboard of the modern Gothic character, with plain carving and coloured inlay, which may please a select class;

but it has not afforded the carver an opportunity of showing his art with any great success. Quant and Gothic it may be, but in this instance there seems a striving after something that will not meet with many admirers or imitators.

Lamb, of Manchester, again exhibits his sideboard of 1862, and it is here seen to great advantage. It is a fine, handsome work, with its well-modelled and well-carved figures—the panels of game and the free and well-finished carving of the ornament being noticeable. There is also a cabinet having some small and very fair carving.

Crace exhibits a well-designed Gothic cabinet, which possesses some carving that is treated with a nice feeling, and is carefully finished. It is perhaps somewhat too delicate in parts; but still it is good, and superior to much that is seen elsewhere. The walnut cabinet does not improve upon a second acquaintance.

Forsyth exhibits an oak font cover, in the style of the decorated Gothic, having his usual careful carving.

Some exhibitors must necessarily be passed over; but G. A. Rogers has been ill-advised to exhibit such poor examples of the art. Where there is not experience, there should be signs of talent at least; and sound advice should be given and acted upon in order to win laurels in this field of labour. I say this because he has friends, and he should be saved from them if they lead him wrong.

England exhibits but few fancy articles; no caskets, no inkstands, or fancy articles for the table. Mr. Farrant, it is true, has exhibited some bread-platters of a better character than those generally seen. These things have been in fashion now above twenty years, and the thanks of many are due to the artist who designed them. Something more is wanted in this class of manufacture.

Our great want is good designs—something that shall not be an unmeaning jumble—a more intelligent direction in carrying them out—a liberal use of thoroughly modelled works to be reproduced in the wood, and not till then shall we have a chance of reaching the goal side by side with other nations.

ITALY.

The works of this nation are such as to enable her to claim very high honours in this competition. Great taste is shown in the application of the art to many purposes. We have elaborately carved glass frames, numerous picture-frames and caskets, and bold and vigorous examples of architectural workmanship. In the finish of the Italian work the carving is mostly left from the tool, and in many cases the ornament is worked over with small gouge marks repeated side by side. This method gives character, and an effective, lively appearance. The difference between it and the French is very striking. In the Italian there is considerable boldness, with deep undercutting, and generally bristling with sharp points and edges, with surfaces having numerous lines. In the French there is a thoroughly modelled softness, and a smooth and high finish. Much of the Italian work looks mounted on, whilst the French resembles repoussé work. In the English work we see a striving after both methods.

The large glass frame of walnut with a gilt ground, by Giusti, of Siena possesses great excellence in the design, and the carving is good. He has the gold medal awarded him. There are several small frames in most excellent taste, having but little projection, the light and simple carving being well brought out by a gilt ground. A small walnut cabinet, with very free and well modelled renaissance panels in lime-tree, in its own natural colour, is a superior example. A large walnut side-board has a profusion of carving; but as a piece of furniture it has not a comfortable look, and the carving is coarse. A clock-case has some excellent carving, and is much smoother and better finished than many of the other works. The carving on several pianos is plentiful enough, but obtrusive, and in some instances rude and commonplace. Some pedestals for busts, executed in walnut wood, are smothered with bristling ornament, showing great want of modelling.

Luigi Prolini, of Florence, exhibits some carvings of a very high order of merit. A portion of a pilaster panel in lime-tree is of a bold and effective character, consisting of free Italian foliage intermixed with birds, and as a specimen of good, bold carving it is highly successful. Twelve small panel ornaments, in pear-tree, are beautifully-carved examples of Italian work, and are evidently appreciated, as they have been purchased for the Museum of Vienna. This artist also exhibits a small and very pretty oval picture-frame. The design consists of vine-leaves and grapes, with a number of little birds in various positions perched upon the branches, all very prettily carved. A series of seven portraits, in very low relief, are some of the best examples of wood-carving. The wood resembles hornbeam, has a pleasing colour, and bears a high finish. Garibaldi, Rossini, and the others, are almost speaking likenesses. Doubtless photographs have been well studied, and the result is a series of medallions as beautiful as works of art as we could wish to see in any material. The artist receives a silver medal, a reward well deserved, and the only instance in which it has been given for carving pure and simple. The larger frames are in various styles, the Italian predominating, having great spirit in the design, and boldness, combined with excellence, in the carving. One large frame, having Italian ornament treated in a heraldic manner, decorated at intervals all round the sides with medallions, is very effective, and the carving is good. Here is also a very well-designed and carved frame. The groundwork is ebony, and the three boys at the top, and the shields at the angles and ornament in pear-tree, are excellent, the work being one of the best of its class. There are nearly twenty tables, carved and gilt, with round inlaid marble tops. There is breadth in the various designs, though a general coarseness in the execution; but they are noticeable for character and telling effect. The designs embrace ornament, with boys, birds, and animals.

A curious and remarkable frame is exhibited in this section, having great projection, numerous caverns, and considerable undercutting. It is a mass of wild, fantastic ornament, full of life, consisting of monsters, animals, birds and birds' nests, insects and snakes, all thrown together in great confusion. There is to be traced some method in all this madness. The producer is evidently a great worker, an artist who has

taken the wrong road. He seems to have embodied a nightmare, and has given us a wonder, but no pleasure.

The number of works exhibited in this section is large, and much of the carving excellent and very suggestive. It is another school, and, next to France, presents a considerable amount of material for profitable study.

RUSSIA.

Here is a large cabinet having groups of game on the panels of the doors. The style is modern French, but it is coarse in every particular.

SWEDEN.

Edburg, of Stockholm, contributes a large walnut bedstead. The general character is heavy, and the details show want of refinement.

NORWAY.

Here is a Gothic table, with brackets at the back for candles; the work is little more than plain tracery. There are chairs to match.

DENMARK—COPENHAGEN.

Here is an oak figure of a skater; one leg is well thrown behind, and with the other he is striking his way over the glassy ice. It is very good indeed, and has very properly found a purchaser. Much of the carving in this section is laid on, and, what is worse, looks as if it was laid on, a peculiarity almost anyone can see. There are some neat high-back chairs, having an inch rope carved round the sides and tops, that gives a novel and not a bad effect.

SPAIN

Contributes a bookcase that would have looked better were it not painted and badly bronzed. The pianos have no carving.

SWITZERLAND.

Wirth, Freres, are in great force here, their exhibits being greater in number in this section than in the French. There is a whole suite of furniture—three ebony cabinets, an ebony piano, and a walnut cabinet, with looking-glass in the back. Some very well-carved clocks, and a billiard-table, the carving of which is far inferior to the design. Here, on a large scale, we see many fancy articles of various degrees of utility, that are attractive and must be saleable. This firm is surely doing something towards solving the problem of uniting art with cheap manufacture. The work turned out does not consist of masterpieces, but a great deal of it is pleasing and suited to a popular taste. Everyone knows that work executed to order is of a superior class generally. A great effort is made when the manufacturer purposes to exhibit with a view to honours, but that description of work which is manufactured for the market, and is intended to meet the eye and suit the taste and means of the general public, is and must necessarily be of a less com-

plate character. There is in these works a considerable amount of indifferent drawing, and a "cut and run" style of carving, that largely detract from their general merits, but it is only fair to say that this large class of manufacture, with its profusion of carving, displays a certain excellence, and is very suggestive.

AUSTRIA—VIENNA.

In this section there is a bas-relief in the back of a prie-dieu exceedingly well carved, the artist having well earned a silver medal.

PESTH

Exhibits an elaborately designed and carved suite of furniture, consisting of a table, settees, and six chairs, the sides and tops of which have so many boys, that they are principally calculated to please those who are very fond of children.

WURTEMBERG.

Here are a number of pianos, but they have no carving; a great number of clocks, with an abundance of carving, which must be cheap, judging from the quantity given.

DADEN.

A very well-carved walnut cabinet is here shown, with subjects of sport in the front panels of the lower portion. There are two figures at the sides of the back, but they are so detached as to seem removable at pleasure, instead of forming a part of the work. There is also exhibited a host of clocks, carved in a rude manner, some of which are suggestive, and they are very great favourites with the public, on account of their amusing cuckoos and bold but squeaking trumpeters.

Gustave Stovesandt exhibits two large oak panels of fish and game, very bold in conception and fairly carved.

Offenburg sends its freight of clocks, some being good, and plain in design, but wanting in artistic execution. There is also a walnut bookcase having some bold free carving, and noticeable for having the frieze of the cornice filled in with pheasants and young, so boldly modelled as to seem almost alive.

HESSE—MAYENCE.

Here is a large handsome bookcase, having the carving well and cleanly done, though very deficient in modelling—the character of the foliage of the lower panels resembling the artificial leaves of the milliner.

PRUSSIA—BERLIN.

Here is a grand piano, with walnut medallions of eminent composers at intervals round the sides, the effect of which is broad and pleasing.

MAGDEBURG.

An oak cabinet is here shown, with most of the carving laid on; the

style may be cheap, but such as we never wish to see again. Some pianos here are not pretty in design, and the carving is obtrusive.

BRESLAU.

Bauer, Bros., show an elaborate and well-designed ebony cabinet, with purple ground to panels. The carving is very fair, but too much like hard copies of cast leaves. This work, though it possesses a French character in design, is the opposite in its manipulation.

Fredrich contributes a good ebony cabinet, and what carving there is may be pronounced well-conceived but somewhat coarse.

BELGIUM.

Peeters Devoort, of Antwerp, contributes four very finely-carved alto-relievo panels in plain oak, one representing Christ bearing the cross, and another where he is scourged before Pilate. There is great breadth in the modelling, and the carving is highly finished. There are excellent examples of this famous class of workmanship. There is also a finely-carved oak figure of the Virgin Mary. The grand oak pulpit, the largest example of wood carving in the Exhibition, is a most elaborate and finely-executed work. The figures at the angles have a good and striking effect, and the bas-reliefs of the numerous panels are carved in the best manner of the Belgian style of ecclesiastical wood sculpture. The ornamental portions are cleanly carved, but look as if they were done by men more accustomed to the saw and plane than carving tools.

Snyers exhibits a fairly carved large ebony cabinet, combined with bookcase, also a sideboard composed of walnut, oak, and ebony, in which the design is good, but the same cannot be said of the carving.

A sideboard is here shown in plain oak, nearly the whole of which is covered with coarse carving. A boar hunt is represented on the top portion of the back, and the doors are filled with groups of birds. The work might delight a sportsman, but will not serve as a model to an educated carver.

A gun case, by Beernaert, in the Dutch renaissance style, is elaborate and full of work, but wants breadth and simplicity.

The English and French colonies show very little carving, and it is coarse. Some Indian carving is exhibited, but, however interesting, it is not likely to serve as models to European workmen.

The woods used for carving are principally walnut, pear-tree used plain, and also stained black, which is then called ebony, that wood itself being little used, because of the difficulty and expense of working it. Oak, plain, and sometimes slightly stained, lime-tree and pine, plain, and also frequently stained, to imitate walnut. Purple wood is also used.

The cost of production could not be ascertained, except in a few particulars, from French workmen, which shall be mentioned in another place.

A word or two, however, before leaving, to pursue our inquiries elsewhere. Only those who, having day after day seen the treasures in

these long galleries, can realize even to themselves the great store of beauties assembled there. Art-workmen would find themselves at school every day, and each would find his judgment matured with increasing knowledge. There is ample room for all to tell their fellow countrymen that better must be done in the future, and that it is not in material that there is real difficulty, but in want of knowledge: and when that is gained we shall witness achievements that will surpass all former efforts. A lingering last look is given, and henceforth it is matter of history, and the wonders live only in the memory.

THE ART EDUCATION OF THE CARVER.

A great number of circumstances and influences may be enumerated as belonging to the subject of the education of the art-workman. To inquire how the character of the workman is developed, and so trace the causes of the differences in the work of the various nations, must undoubtedly be desirable and useful. It would be difficult to ascertain with any degree of certainty, but a search may bring something to light.

Each nation has a genius and a history of its own. Climate, locality, institutions, traditions, and various material causes have their several influences. Certain productions are native to particular latitudes, and probably the art of carving flourishes best in places peculiarly favourable to its cultivation. Taste, intelligence, and industry, will, however, overcome many obstacles, and great industry in any particular direction will bring proportionate success.

The inquiry proposed occupies too large a field for one whose personal observation and experience are confined to England and a short stay in France, and therefore that which follows must relate solely to those countries—France in particular deserving our best attention.

There is ample proof that France is a land of great beauty and fruitfulness, and it is also rich in works of art. The people of the present age are in the midst of glorious monuments of grandeur and beauty bequeathed to them by their forefathers. The people appreciate them, and industriously and intelligently continue to build up and still farther beautify the great edifice of art. The architecture of Paris is a great school, and the student who enters daily receives valuable instruction. To see Paris, or know something of it by description, is to understand how it is that France has distinguished herself among the nations. It would seem almost impossible to be in the midst of so many examples and not grow up imbued with a love for, and also instructed in the art of, carving. The old streets present many interesting examples in wood and stone, and in the new ones there are some glorious works that bring us down to the taste and style of our own time. Variety, good character, and excellent design and workmanship are strikingly manifest in these works. Added to these, there is a fitness in all that is done. Fine and well-carved oak-doors are to be seen of a character we never see publicly exposed in England. The stone carving is good and well finished, and by the circumstance of its thus being side by side with the wood, the quality of the latter must be greatly and beneficially influenced.

The *Salle Sauvageot* in the Louvre contains a rare and valuable collection of wood carvings, consisting of fine old cabinets, and a case of small and beautiful metal lions, miniature frames, and a number of fancy works, the study of which must do much to forward the carver's education.

The educating influence of the arts of painting and marble sculpture should not be overlooked. The long galleries of pictures at the Louvre and Luxembourg Palaces tend greatly to cultivate and refine the taste. The interiors of these palaces, and also those of the numerous churches, furnish a large amount of material for profitable study. A sight of the *Venus Victrie* must almost make a youth worship art and resolve to be an artist.

The schools and system of instruction are valuable aids in developing the art talent.

I visited the *Ecole Impériale Spéciale pour l'Application des Beaux Arts à l'Industrie*. On that occasion there was an exhibition of the works of the students, and the number and variety were considerable and interesting. Conspicuous among the exhibits were some large models in clay. The Minister of Instruction had dictated the subject, and the following were the particulars given:—A somewhat large tympanum of a pediment, to have the head of a bull for a centre, resting upon a shield, with accessories of boys and festoons of fruit and flowers. The best was a very successful interpretation of the order given. A vase, intended to be executed in silver, was also modelled according to instructions. There were several competitors in each case. These studies were little more than good sketches in clay, but it was evident that the students were learning a most useful lesson, that would stand them in good service when they went forth into the world. There were the usual school studies, both in clay modelling and drawing, or rather superior sketching, the prettiness and high finish aimed at in the English schools being left alone. There were copies of casts of figures and ornament, drawings of natural leaves and flowers, sketches from memory of well-known works, original designs and sketches done in a given time. All of them were interesting, and indicated great industry and a promise of excellence. It seemed abundantly clear that the system pursued was simple and rapid, and that the teaching and practice produced valuable results. It seems to have great vitality, never being without deep and varied interest to the students, features that should distinguish every school, and without which they will assuredly fail in accomplishing the objects sought to be attained. This system of being content with good sketching in all branches of instruction in art seems to be the life and soul of art as applied to manufactures; good sketching is acquired, and as few will require to gain a subsistence by making finished pictures, a valuable and sufficient power is gained that is always in great request and is never lost.

A visit to the exhibition of the works of the students of the *Ecole Impériale Spéciale de Dessin pour les Jeunes Personnes*, showed that the young ladies practised the same system with very profitable results, although in a less degree. Their studies partook largely of pen-and-ink drawings, with a view to the practice of the art of wood engraving.

I am informed that the fees are little more than nominal, the main expenses of the schools being borne by Government.

An examination of the works of the Parisian and provincial schools in the Exhibition told the same tale, of a system that gives simple and varied exercises to the pupils, that eminently fit them to acquire proficiency in those branches of art-industry to which their tastes incline them.

RECREATION.

The people of Paris pass much of their leisure time in the open air. Their taste for light beverages, soberly indulged in, indicates, and is favourable to, refinement; and, as is well known, the places are numerous enough that invite the Frenchman to rest himself and sip his coffee or drink his wine. Still there is a pleasant alternative provided, and it is not difficult to imagine that it was found necessary that there should be pleasant places of resort that should cost them nothing. Hence you find that nearly every open space is planted with trees, and laid out with a taste superior to that which distinguishes the gardens of many of the wealthy class in England. Statues, beautiful fountains, flowers, and seats are in abundance. All the "squares," as we call them in England, are given up to the people for recreation and rest, and hours are innocently and profitably spent there. It is not too much to say that the daily sight of these things contributes towards fostering the artistic feeling. French intelligence and taste have demanded them, and they surely tend to good among an intelligent and appreciating people.

If a workman desires to study animal and vegetable life in connection with his art, the entrances of the Jardin des Plantes are free to him and the public at all times.

On Sundays the galleries and museums are all open; and though it may be objected to as being an irreligious provision, it nevertheless exercises considerable influence upon the taste, and increases the workman's opportunity for study.

INDUSTRIAL ART INFLUENCES.

The various branches of art-manufacture, and notably the beautiful Sevres china, doubtless exercise considerable influence upon the character of the carving, for it is almost impossible to see these splendid works and not learn something more of drawing and modelling, and thus increase your knowledge of the beautiful in art.

The magnificent examples of the goldsmith's art, displaying as they do such exquisite design, modelling and delicate chasing, are most certainly important and valuable in their influence.

The splendid and numerous works in bronze supply a large amount of material for study, and are sometimes placed in the hands of workmen for direct imitation. The numerous works upon which the professional modeller is engaged, such as models for casting in various metals and materials, as *carton-pierre*—of which there are beautiful examples—deserve to be remembered as aids in promoting the education of the wood-carver. We thus find that the excellence and forward state of industrial art generally stimulate and force the realization of excellence in our own.

CONDITIONS OF LABOUR AND WAGES.

The time spent in Paris was too short for collecting many facts relative to the system of working and the amount of remuneration. From what could be gathered, however, piece-work seems to be the prevailing system, and by the workmen is preferred to journey-work, or payment by the hour or day. In the piece-work system there is a liberty that is very precious to Frenchmen. However valuable machinery may be, our French brethren consider that their faculties are such as to make them very different things to a mere tool, or a convenient piece of mechanism. They love personal liberty, and holidays and hours of leisure are freely claimed; and who knows but what their labour has all the energy, along with all the willingness, that is necessary when required. The French carvers are also of opinion that their system develops power, skill, and superiority, and that journey-work tends to keep down energy, and seldom rises above mediocrity. At a meeting of French carvers, which I attended with some friends, these views were expressed with great emphasis. Our French brethren received us in a most courteous and friendly manner: they showed an anxious desire for union and interchange of sentiment, and tendered us such advice as accorded with their experience. Their friendliness was shown to us in a most marked manner, and I feel sure that their feeling towards us is highly creditable to their intelligence, and that their valuable counsel is deserving our best attention.

Much of the inferior work in Paris is badly paid for, and the pay is said to be less than is given in England for a similar class of work, but the good average workman, and particularly the superior workman, is paid in accordance with a scale of remuneration that is much higher than that which prevails amongst us. A franc an hour, and sometimes more, is a very general price, whilst piece-work is much more remunerative.

Apprenticeships are short, being about three or four years in duration. A youth learns more than the rudiments of his business in that time, and is then thrown upon his own resources, and at an early period becomes a competent workman.

The liberty of the workshop is considerable, for the iron hand is not upon the men, neither is the employer or foreman regarded as a warder of a model prison, whose duty it is to keep men silent and at their labour.

It is claimed that Paris is the workshop of the world in the speciality of carving and those works with which it is connected. Certainly the amount of carving done is immense. Doubtless the large orders received, combined with the best arrangements, such as good workshops, good machinery and appliances, good models and drawings, &c., and thorough practical men in command, are among the causes which lead to comparative cheapness of production. Large orders are received from England; and although the workman is higher paid than in England, the total price is less to the purchaser. To sum up, it is asserted by Englishmen well acquainted with the Paris workshops, and also by French workmen, that our system requires great alterations, and, among other things, piece-work, where practicable, should be substituted for journey-

work, paying more liberally, —not adhering to a level scale of remuneration, which is alike assented to by both employers and workmen, amongst us,—letting each gain that which his unfettered hands will obtain. Not till then will our work be characterised by anything but dearth and mediocrity. To keep down energy by insufficient remuneration, is to establish a class of dull workmen, who will never give us good art. To insist upon long hours of labour, with no leisure or holidays, will not give facilities for study, or enable the workman to enlarge his store of knowledge, or give him that interest and pleasure in his labour without which no great success can be expected.

WORKSHOPS OF PARIS.

In company with several fellow-workmen I visited some of the principal workshops, by means of introductions furnished me by M. Haussoullier, Secretary of the British Workman's Hall, and representative of the Society of Arts. To this gentleman I desire to offer my best thanks for his courtesy and kindness.

We visited the large establishment of M. Fourdinois, and were received with great courtesy, the many excellent arrangements being most patiently explained to us. Carefully-worked models were being copied in wood, and good and most unmistakable drawings were also furnished. The shops are light and commodious, and the machinery employed rendered valuable assistance to the carver in many ways. Some of the work was done expeditiously, yet the men were well paid, and the ultimate cost less than in London.

On the occasion of our visit to Allard and Chopin's we found a large number of men employed, who received us in a very friendly spirit, and willingly answered any questions put to them. Some of the work showed less finish than is generally desired, yet the prices were very good. The usual run of work combined good effect with cheapness. Models were freely used.

At Jeanselme's the same friendliness was shown us by all. The workshops here are very fine indeed. The plaster casts and models are in hundreds upon the walls, to be handed for use when orders were being executed. The show-rooms, too, are large, containing numerous articles of furniture, showing a liberal use of carving.

At Racault's the quantity of furniture of all kinds, with a vast amount of carving, that filled their immense show-rooms, was something astonishing to an Englishman. The best feeling was here manifested, and the conviction was once more forced upon us,—that though the prices seemed low in some instances, yet the carver could in general earn more money than in England.

TRADE ASSOCIATIONS.

With regard to the associations of the workmen, I could learn but one or two facts. The carvers are associated together, numbering several hundreds. The members consist of workers in both wood and stone, but principally wood, and also modellers. Their objects are to promote the exchange of friendly sentiments, furnish trade information to each other, and especially to the unemployed. They have also taken

in hand the subject of wages. Having found that some of the Paris shops were paying a very low rate of remuneration, it was determined to ask for an increase of 20 per cent., and the demand was acceded to in each case. A fund is established to support those who may consider it their duty to refuse less than the market price for their labour. The society has not been long in existence, but it is very popular, and is deemed very useful.

CONCLUSION.

Something has been said about our own work and system, and the opinions of others rise before us deserving serious consideration. It will be unnecessary, therefore, to enter at great length into the reasons that might be assigned for the excellence in our own works, or the causes that have operated in preventing us obtaining those distinctions that as Englishmen we desire. It is not the fault of one class, for the fault lies at the doors of all concerned. The workman, I know, must study his art; but after all he is but one instrument, and it will be of little use if those who direct and pay him for his labour do not know what they want. The workman is but one instrument of several that are, or should be, employed. The division of labour is such that each must be fitted for his place; for as a machine is made up of parts, so all should be sound and right for practical working, for should there be a flaw in any one a breakdown is inevitable. I venture to assert that the flaw is not to be found among the workman-class to the extent that is generally believed. I think, too, that the changes required must be initiated by those above rather than by those below. We want all to think these matters over, and see if better cannot be done in the future.

The education of the workman is of primary importance. Our schools have rendered valuable service, and much of our progress is traceable to their influence; but they are capable of doing more, if only a new life is infused into them. Our great buildings are full of excellent examples, which deserve to be more studied than they are. In our museums and galleries there are splendid examples of art that if studied would work wonderful changes in our taste and power. I know that they are not esteemed as they should be, and I also know that they are not so accessible as they should be. Establish more museums of industrial art, be they ever so small, and let them be open at convenient hours and days for the artisan class. Let the architects look to the carving that is being done in our new London, for much of it is a scandal and a disgrace to our taste, and its effects upon the carver's education are most damaging. Something better is demanded. If we are to have any art in our streets, pray let it be good and instructive. Let us have our open spaces in the metropolis arranged to please the eye and develop the taste; and at the same time provide the means of rest for those who do not want the accommodation supplied in places of resort that are questionable. Do not forget that the education of the workman is not confined to the established schools, for there are many ways of increasing his knowledge outside the walls of those useful places. Let the workman be encouraged to learn and practice the arts of drawing, modelling, and design, for they undoubtedly constitute the very ground-

work of the carver's art. Let the encouragement be kind, friendly, and continuous, taking the form of liberal prizes to the advanced workmen, accompanied with numerous small prizes, in order to develop the industry of all. Lectures on art would be of great value, for men would be by them induced to study, and put forth their strength. Let our system of instruction and practice at our schools be simple, inviting, and interesting—not dull, repulsive, and crushing, as it certainly has been to many. We have the stuff amongst us,—let it be cared for in a large and liberal spirit, and it will be strange indeed if the England of the future does not see something more worthy of her great name.

WOOD-CARVING.

By R. BAKER,
WOOD-CARVER.

IN accordance with my instructions from the Society of Arts, I beg to submit the following remarks as my report upon the wood-carving of the Paris Exhibition, and of the information I have gained in my interview with the French wood-carvers and their workshops.

The art of wood-carving may be said to begin at the rudest notching, and terminate in the noblest thoughts, expressed in the most beautiful forms. The united sentiments of a nation give birth to a national style of ornament; and in judging of the merits of carving we must not only consider the beauty of the forms carved, but how far those forms harmonise with the style, and in what degree they express the idea of the object they represent. At the present time work is much divided, and the main business of the wood-carver is to carry out or execute, in his material, the thoughts and designs of others. This gives a tendency to high finish and perfect detail, at the expense of the general harmony of the work, and the neglect of the higher principles of the art.

The Exhibition contains a few specimens of old wood-carvings, some of them displaying great abilities in conception and execution. Some specimens of church decoration of the middle ages show great perfection, not merely as specimens of carved decoration, but showing to what purposes the art was then applied; some of these pieces contain subjects of the highest order, appealing to the imagination and leading the mind to the noblest reflections.

The modern carvings of the Exhibition consist chiefly in the enriching and decorating of furniture, but beyond a few well-known subjects, such as the four seasons, or the four quarters of the globe, the carving is not of a suggestive character, though executed with great taste in arrangement and delicacy of finish; works are exhibited in the styles of almost every period, displaying abilities in the great body of modern carvers, such as were possessed only by a select few in the past. In this respect England has advanced considerably, but it is in the French department we find the greatest perfection, and the most general progress. The Italian renaissance forms the basis of modern French styles, although there is so much originality in design, and such variety in the treatment of the ornament, that it possesses a distinct character of its own, and this is vaguely known in England as French, but French work differs much at different periods, and it is recognised as different

styles, the character of Louis XIII. and XIV. being massive, broad, and heavy in detail, while Louis XV. is light and extravagant, having a wild and exaggerated appearance. Then, again, Louis XVI. is pure and simple in outline, and chaste and natural in the treatment of detail. The present style, French renaissance, retains much of the character of Louis XVI., but it is sufficiently original to make it distinct from any other style. The principal works exhibited are in this style, with some important pieces in pure Louis XVI. There are also a few pieces in Louis XIII. and XIV., and some in styles of remoter periods.

M. Fourdinois, by employing the best talent, retains his position as the leading firm of Paris; his ebony cabinet, with inlay carved work, is unequalled for design and workmanship, it has also the merit of originality in the carved inlay work, but it is rather over-done in the minuteness and delicacy of detail; the inlaid wood restricts the carver, and the colouring somewhat destroys the effect of the carving; as a specimen of carving it is not equal to the upper portion of his other cabinet. M. Grohé's work is rather less perfect in design and finish, but there is more invention in the carving.

Gueret, Freres, make a good show, but their works are not equal to either Fourdinois or Grohé's in purity of design or excellence of execution, but they are good, effective, and not so much like exhibition work. Their ebony cabinet, although somewhat faulty in design, well represents the actual character of the ordinary French carving; it is not so elaborate in detail as M. Fourdinois', but more effective when seen at a distance, and scarcely less pleasing when closely inspected. The French are not so successful in their attempts to reproduce works in ancient styles: this is seen in a large ebony cabinet of the twelfth century. The carving is more suited to a monument than a piece of furniture.

Next to the French, the English department is best supplied with specimens of carving; the style of the English work differs but little from the French, with the exception of a few pieces of Gothic furniture, but the general character of the work is inferior, although almost every piece of furniture contains some portions executed by superior workmen, equal to the French: this is particularly noticeable in Messrs. Trollope's work, where the clever hand of Mr. M. Rogers may be clearly traced (this is not the Rogers the celebrated dealer in carvings). The general design of the English furniture is good, and shows considerable progress; it may, in this respect, be favourably contrasted with the French, and for practical purposes it is superior. As an instance of the bad construction of the French work, the centre table of the pavilion of the Empress is obliged to be screwed to the floor, to prevent its falling over at the slightest touch. This is an error English manufacturers are not likely to commit, because they make utility the first consideration.

Messrs. Wright and Mansfield exhibit a very handsome and meritorious piece of furniture, but the carving is its weak point, badly designed, and carved without taste or abilities; the carving destroys its artistic value.

Messrs. Gillow exhibit several pieces of richly-carved furniture; the abilities displayed in the carving are much varied, some portions being tastefully arranged and cleverly executed, while other parts are coarse

and inferior; this is the case with the English carving generally, which shows a want of good management. Some portions of their ebony cabinet are confused, and show timidity in execution; this is often the case when the carver is engaged on work superior to what he is generally accustomed to, and is an obstacle to his success.

The English carving is sharp and keen, but the thick edges are unpleasant. When this is avoided, by rounding the work, it loses the necessary shadow, and becomes tame and heavy; the French not only avoid the thick edges, but, by a variety of effective touches of the tool, give life and vigour to their work. It is to these enlivening touches that I would direct the attention of the English carvers.

Messrs. Holland's Gothic sideboard is certainly the most original and the best piece of Gothic furniture in the Exhibition; the intention of the carving is suggestive, but it is scanty, and of no particular merit.

In comparison with the French, the English carving is tame and spiritless: the French workman seems imbued with a true love of his art, and executes it with a warmth of feeling which gives it life and sentiment, and this gives his work its superiority. If we examine attentively a portion of French work, we find the main object of the carver is to give his work spirit and expression. Take a rose, for instance; it expresses all the characteristics of a rose: the form, the life, and even the colour is there substituted; and yet it is not the exact copy of the form of a rose, for if it was, it would look poor and lifeless, but it looks rich and full of life, and this is done with comparatively little labour. The carver must understand and feel the true spirit of the object he is carving, otherwise he may bestow much labour, and display much skill and cleverness in tooling, but his work will still be deficient in that which is essential to its artistic merit: not that there is a total absence of this artistic feeling in the English work, but they seem to have studied cutting their work sharp and clean, in preference to anything else. As a whole the English carving is equal, and, perhaps, superior to any of their previous exhibitions. Their progress is seen not so much in what is actually exhibited, as in the almost entire absence of decidedly bad work. There is scarcely any of those tame and laborious imitations of nature which usually abound in our exhibitions; this indicates improvement in taste.

The Italian department is rich in good carved work. Whatever merit the Italian work possesses, it is entirely of their own creation. Their work is the expression of their national sentiments, generally well-designed, carved boldly, and treated in a broad manner. The human figure, or animal life, which forms the chief point of their work, is carved with much vigour and expression. The ornament is crisp, and left sharp from the tool, but lacking that graceful play and contrast of the French. The Italian work is best suited for architectural purposes, but loses some of its effect when applied to furniture; being too much in the same relief, it appears superadded. Their carved frames are light and much superior in effect to our composition frames. The Italians, by relying upon themselves, and by the vigour and abilities shown in the execution of their work, seem destined in the future to again take the lead in the art of carving.

There is a good deal of picturesque carving from Switzerland and Germany, but not of sufficient merit to be instructive, excepting the works of Wirth, Brothers. This class of carving, although called Swiss carving, is in reality one of the stages through which the French carving has passed. It was extensively patronised some ten or fifteen years ago in Paris. It is composed of natural forms, carved in an off-hand and sketchy manner. This is its chief merit. The English carvers would do well to practice this style of carving. The English carving would be improved by having some of these qualities imparted to it. By a careful study of the carvings exhibited, I conclude that the art of wood-carving generally has attained a perfection never before equalled, either for design or execution, although it has been applied to nobler purposes, and I leave the Exhibition convinced that the French work is superior to any other nation.

I next visited the principal workshops of Paris, and, by a careful comparison of prices, confirmed a previous opinion, that work is produced cheaper in Paris than London. London contains about 1,700 carvers; Paris about 3,000. The exportation of carved work from Paris is extensive; London exports scarcely any—in fact, our manufacturers purchase much of their carved work in Paris. From these facts we may conclude that work is cheaper in Paris: and in my inquiries I endeavoured to ascertain the cause. A knowledge of drawing being essential to a good carver, the schools of design in Paris are more numerous and easier of access than in London. Their system of teaching is superior for practical purposes than our own; it gives a better general idea of the object designed. Instead of exact outline, and a slow and tedious process of shading, they time their pupils, allow them more latitude, and get a better general resemblance of the object copied. Apprentices generally attend these schools in the evening. At the age of thirteen or fourteen boys are apprenticed, serving three to five years, and are remunerated in proportion to what they earn. This encourages quickness. Being free at the age of seventeen or eighteen, they change their workshops, and gain experience, at the age when the mind is best suited for receiving instruction. At twenty-one he is already an experienced workman, just when our apprentices are merging from their semi-torpid existence. Their workshops are conducted in a manner which allows the greatest individual freedom; by conversation, and the mutual exchanging of thoughts and ideas, the workshops form an important source of information and instruction: but the most important difference between the French and English workmen is, in Paris they are paid according to their abilities; in London wages are nearly uniform; one encourages a man to become proficient, the other is discouraging, because he has no hopes of being rewarded for his perseverance. As soon as a French workman shows signs of special abilities, he is patronized and encouraged, and by working in accordance with his inclinations, he continually gains experience, and ultimately arrives at great perfection. In England we have no such special patronage, but spend the best part of our time in executing work repugnant to our feelings. The difference in the cost of work is in the inferior and mechanical portions. The best work cost about the same in Paris as in London, while the inferior

parts cost often less than half. The work is also more divided in Paris. All mouldings are either done by machinery, or by men forming a separate branch: this relieves the *bonâ-fide* carter of much mechanical labour. The French workman is generally supplied with good designs and models, which he slightly alters to suit the grain of his wood, without injuring the original design; this facilitates his progress. In fact, the employers seem to give their workmen every scope and encouragement for the display of their abilities. The art-workmen of Paris are exempt from certain government restrictions imposed on other trades, and society looks upon the profession of the carver as a superior calling; his abilities are acknowledged and admired: his sense of praise is keen, and he strives to distinguish himself in his profession. The French workman is free in his habits, and his domestic cares weigh less heavily on him than with us. He often relieves his mind by amusement and recreation. French society allows much latitude for individual taste in matters of dress, and no one is ashamed of the costume of a working man. The dress of both him and his family is more economical and better suited to his position and occupation than ours. Their desire to become rich is not so strong, because there is less rudeness to the poor, and intelligence is more esteemed. Works of art meet the eye in every direction, and his mode of life assists the mind in its artistic play. If the French workman had the same difficulties to contend with, he would not produce his work better or cheaper than we do. Our inferiority is not through a want of natural abilities; but our natural genius wants encouraging and directing. We are more serious and contemplative, and our carving should be the expression of our natural thoughts. Our rich patrons leave the decorating of their apartments too much in the hands of the manufacturers, who are in the habit of considering their own interests; and our architects leave the embellishment of our cities too much in the hands of the builders, who are not notorious for their refined taste. I think this is the root of our inferiority. It is for the rich of this country to insist upon having good artistic work, and there would be no lack of good artistic workmen to do it. The Society of Arts deserve the thanks of English art-workmen for their endeavours to encourage them in their profession. Their system of annual competitions discovers some of our best workmen; but, having discovered them, the Society should see that their abilities are not lost to the nation. The decorations of our public buildings and monuments are executed in a manner that do us no credit, because they are in the hands of inferior but more pushing and speculative men, while our best workmen stand idly by, or are occupied in a subordinate position.

In conclusion, I beg to thank the Society of Arts for their assistance in enabling me to visit Paris. I regret I cannot more ably convey to them the information I have gained, which I shall endeavour to do in a more practical manner to my fellow-working men.

CABINET WORK.

By THOMAS JACOB.

CABINET DRAUGHTSMAN.

THE following is the result of my observation during fourteen days' stay in Paris and the Exhibition.

The easy access the French have to this Exhibition accounts for their number of exhibits exceeding that of any other country--in this branch especially; so that to determine, from the number of pieces exhibited by this country, which is the foremost of the two (for France is the only country we in a few things fear), is scarcely fair, as we are far from being represented by a fair proportion of our principal manufacturers. I should have been much better pleased if there had been a greater number of English exhibitors, so that a more general and decided opinion as to the merits of each country in design and workmanship in cabinet work could have been given, instead of leaving so few of our firms to maintain the reputation we have so long enjoyed for good and sound workmanship in all competitions in which we have entered.

France is certainly before us in design, but not in workmanship. If steady hard labour or good sound workmanship is required, the English mechanic is second to none in the world, provided he has the tools and material to work with; but if art-workmanship is required, it must come from a man who, besides being a good mechanic, must, to some extent at least, be able to use the pencil also; this being the case, just as education proceeds and a taste for the beautiful is diffused among working men generally, by means of schools of art and free access to our museums, particularly on Sundays, so will art-workmanship in this country rise to at least a level with that which is so much admired abroad; though I think a person who has once seen Paris, walked through the main thoroughfares, and visited their public buildings and churches, cannot help feeling quite contented to be beaten by a people for whom their Government has done, and is still doing, everything possible for their artistic improvement, and whose wish it seems to be that every building shall be not merely a building just sufficient for the purpose it is intended to serve, but be, in the true sense of the word, a monument, erected and decorated without any apparent regard to cost; the material which is principally used (a white stone) having the double advantage of being quite soft, and almost as easily worked as a bath-brick when new, and of becoming as hard as a rock after being some

time exposed to the atmosphere. The clean appearance of the buildings is long preserved, as no factories are allowed in the town from which any amount of smoke (or noise) is emitted. As to the carved decorations, nothing is spared, either by way of figures, ornament, or metal work, so that every building is, in some way or other, calculated to promote design and good taste. A Parisian may very properly be considered to "live" in a school of art; and a taste for the beautiful is so diffused amongst the people (a natural consequence), that scarcely anything is attempted that does not exhibit considerable taste. I speak now of the fittings up of their shops and shop windows, which they do to very great advantage, especially the jewellers' shops, who spare no amount of gas, silvered glass, or attention to the colours of their priced tickets, to get up a dazzling effect, to detail which would only be assisting our jewellers to palm off their articles upon the public, without increasing their value; besides this, many shops are to be seen in which the fittings are certainly better and more expensively got up than much of the furniture of many well-to-do people of London: frequently the floor is of polished parquet, and sometimes of glazed tiles: in all cases particularly clean and neat.

Besides the advantage of being continually in view of these fine buildings and monuments, they have several splendid museums, in which all who are disposed can study, at almost any hour convenient to themselves, particularly on Sundays. Contrast this with the arrangements of our institutions,—the British Museum, for instance, which, we are proud to say, contains the most valuable collection of antique objects in the world, and which for study nothing can be better. Can we get in there at times most convenient to us, or on Sundays? No, nothing of the sort. On approaching the gates a large board announces that "This museum is open on Monday, &c., from 10 till 4:" and if it happens to be on any but these days, no matter, however strong your inclination to go in, or the good account you might be able to turn this visit to, it is not possible to enter.

To improve the taste of working men, every possible opportunity should be given them of inspecting works of art during their leisure hours, that they may see what has been and is being done by the artists, who are but men like themselves: it is unreasonable to expect a man to imitate or rival that which he has never seen; but after he has seen these things, if he has talent and metal of the right sort in him, he will not long be content to lag behind his fellow-workmen of this or any other country; but, under the existing arrangements, how is a working man to find time to study these things, and at the same time to apply himself regularly to his bench (for instance) so as to hold his position there and to be of use to his employers? If he does this, his only chance of study must be after he has left off work in the evening; and I think there are very few men who, after having done a good, honest day's labour, are either fit, or in the humour, to sit down and study in a school of art; and, unless it can be shown that a working man can command an unlimited amount of physical endurance, such means could at most be but partially successful. But, it may be said, mechanics generally keep Saint Monday; if they have any desire for visiting these places they will go

there on these days instead of resorting to public-houses. That is all very well: but who are these men? I am afraid the men who neglect their work to keep Saint Monday are not of that class of workmen who would be likely to make proper use of schools of art or of galleries where they might study.

The man who wishes to attend regularly to his work, and to maintain himself and his family in anything like a creditable position, well knows he cannot afford to lose days or even half-days; if he did so, the wants of his family must to that extent be neglected; and, besides, it is not merely one day's study a month, or anything like it, that will be sufficient to do the amount of good required; it must be a steady and continual study; and if working men had the advantage of visiting our museums one day in the week, their taste would soon be very greatly improved. Now these are the men for whom opportunities are wanted to study in our museums and galleries; and I do not see any other means of affording such opportunities than by allowing them free access to such places for a few hours on a Sunday, though I am well aware that the idea of giving the English artisan access to museums and picture galleries on Sundays will for a long time yet meet with strenuous opposition from many influential members of the clergy, whose duty it is to maintain the sanctity of the Sabbath. But does it not seem most extraordinary that while the clergy of the Established Church are opposed to even a band playing in the parks on a Sunday, on religious grounds, very many of them are doing their best to lead away whole congregations to the practice of a religion which tolerates dramatic performances, horse-racing, and bull-fights on the Sabbath day? Such things we do not wish to see adopted in this country, nor do I think secular music at all suitable to be used on a Sunday, but I am of opinion that if the leading members of the clergy could see inside working men's homes (frequently only one room) on a Sunday, they would withdraw their objections, and allow them the pleasure of listening to good sacred music in the free open air, in any of the parks on that day, and I do not believe religion would suffer by it. But, then, I may be asked if I would destroy the Sabbath-day's rest, and make all days alike, or would I assimilate the English Sunday to that of the French? Certainly not. The British workman does not want to be told he does not work hard enough, and that he must labour on continually all days alike, as they do in Paris: nor do I believe that the French workman, who makes no difference between Sunday and other days, performs a greater amount of work than the Englishman with his six days a week; for although the Parisian artisan employs a great portion of the Sunday in labour, thus making all days nearly alike, a great deal of the two or three following days is often spent in idleness and profitless pleasure-seeking—a state of things most undesirable to see adopted on this side of the Channel. To adopt whatever means may be the most advisable to raise the character of the English workman, as an artist as well as a mechanic, to enable him to compete successfully with his foreign brother, is the work to be done. But the great thing is to find out those means. Some perhaps may say that the English working man is naturally deficient in his taste for art; that he cannot perceive the difference between works of

art, whether good or bad; and that it would be useless to expect anything from him besides mere mechanical labour, whatever facilities for improvement may be thrown in his way. But this cannot be so, or, if such natural deficiency exists, how is it that it does not extend throughout all classes; and how does it happen that the educated and wealthy classes of this country are so keenly appreciative of all that is beautiful in art, music, and literature, and whose houses are perfect magazines of all the beautiful things the hand of the artist or mechanic can produce? Such things could be had from abroad; and it would seem to have been thought not worth while to encourage talent at home, just as it used to be thought dangerous for a working man to learn to read and write; and thus it is no great wonder that the English artisan should have been inferior in taste to men of his own class in other countries of Europe.

But, now that the education of children is occupying so much attention by the government, I think an excellent method of raising the character of the English workman as a mechanic or an artistic workman would be something in this way:—Whenever a boy leaves school, let him be furnished with a certificate, stating the progress he has made in learning while at school (as is done in a few schools at the present time); and if he is apprenticed to any trade let him be encouraged to bring to the school, periodically—say twice a year—specimens of his work, or a note from his foreman, stating what progress he was making towards usefulness. Here would be an opportunity afforded of giving him a few words of encouraging, sound advice, which parents are too often unable to give. Some such plan as this need not be attended with much expense, as there are in almost every locality plenty of educated people, belonging to the higher classes, who would willingly give a little of their time and attention to such matters; and as it is in the earlier years of a young man's life that good advice and encouragement are needed, I cannot help thinking some such plan would be productive of most excellent results.

But education is a question so vast and all-important, that, in attempting to deal with it, thoughts crowd upon thoughts in such endless variety that it becomes difficult to arrange them in such order as to be presentable to the reader. I think it is most clearly defined by calling it, "The art of making men and women useful;" for if we except just such kinds of unskilled labour as require only the exercise of physical power, we find the man who is entirely uneducated but in a small degree useful to himself or others. Although we have the example of such men as Stephenson, Palissy, and others, who in their childhood were thrown upon the world uncared for and uneducated, to earn their bread and take their chance to stand or fall, to show that a man may educate himself and rise to the highest degree of usefulness and distinction in the world, and leave behind him a name that will last to the end of time, we are compelled to look upon such men as extraordinary exceptions, as we do on great poets or painters; men who seem to bring their profession into the world with them, and are above all human teaching; men who, in fact, seem to have been sent into the world with the stamp of Divinity upon them, to be the instructors of the whole human family. Setting aside, however, these exceptions, the great body of men require long and patient instruction, not only in the school, where they are taught read-

ing, writing, &c., but in the workshop, where they have to take their places amongst the wealth-producers of their country, and to sustain their character as workmen; and in most cases, just in proportion to the instruction received in the school during childhood, and in the workshop during his apprenticeship, so will be his abilities and usefulness when he becomes a man.

The South Kensington Museum authorities exert themselves in a more praiseworthy manner than any of our large institutions to diffuse a taste for art amongst our labouring classes, but still plenty more remains to be done: for instance, if plaster-casts were taken of those splendid pilasters, friezes, capitals, &c., Gothic especially, and sold to the working classes at cost price (there ought not to be any profit put on), they would soon be well circulated throughout our workshops, and I am sure many would soon have a good collection to be proud of. The same may be said with regard to photographs. Why should we not have these also at cost price? And, to go a little further, Mr. Cole or his colleagues might publish a series of popular essays on various subjects, such, for instance, as the harmony of colours, adaptation of form to material, &c. Again, if all Shakespeare's works can be sold at a profit for ten-pence, why should there not be an elementary work on geometry, perspective, and orthographic projection, for, say, two-pence? All these things would tend greatly to increase the abilities of the workmen, as many are quite ignorant of even the simplest problems, in consequence of the difficulty to obtain such works. Biographies of men who have risen to the greatest eminence and distinction from the humblest class, of which there are plenty, might also be desired.

On entering Paris I was much struck by the great liveliness of the streets, for scarcely would you pass a horse that had not his collar of bells, similar to what are used on children's rattles, which, as they joggled along, kept up a continuous ringing; beyond this the drivers have a habit of continually snapping their whips, making a considerable noise, without striking the horses, reminding you more of a large fair than a great city; this having a slight musical tendency, helps, I believe, to keep the people merry. In the evening the streets are still more lively, for, besides the shop and street lamps, the omnibuses also carry lamps, four altogether—one each side of the driver, one beneath his footboard; behind, a board with the word "complet" cut out of it, indicating when the omnibus is full; another lamp is over the door, behind a board in the same manner; added to this it is common for the people to sit outside the cafés to take their refreshment; and as in many places they are sheltered by trees, it is really very pleasant and picturesque; everybody appears to enjoy it, and to be in good humour.

It has often been remarked how much more merry Frenchmen were than the English. I think this is entirely to be accounted for in the difference of the climate: they have nothing near the number of dull, foggy, wet days we have, which everyone knows has a great influence on a man's disposition. If Paris was in that respect like London we should find the Parisians very different people. We could not here sit out in the streets as they do, even if the pavement was wide enough, but for a very limited number of days in the year; so that it would not pay pro-

prietors in general to provide the accommodation, except as it is done by the suburban publicans.

The general drink is light wines, coffee, Cognac and water (not omitting the sugar), and several sweet drinks (groseille), of which they appear very fond; these drinks are very much lighter than our stout, porter, or ale, and I think calculated to have a more jovial effect upon them, certainly not to intoxicate them; an intoxicated Frenchman is very rarely to be seen.

I could not help noticing the dress of the young women, and thought what a pity it was that our young women, who so much wish to follow the fashions of Paris, cannot often go there, and, instead of being led by the articles exhibited in the English shop-keepers' windows, see for themselves what are the fashions generally in use among people of their class in that city. If they could do this I am sure many among them would find it greatly to their advantage to copy in reality the fashions of their Parisian sisters. There, instead of seeing a long trawling dress, dragged with mud, a gorgeous head-dress, and miserable boots (I hope I am not too severe), they would see all, from the poorest, particularly clean and very neatly dressed; anything approaching a long dress I seldom saw—they were generally two or three inches short; they frequently wore low shoes, and I may say always very clean stockings. They had, in fact, the appearance of our country girls, though they lived in the town; an attempt at anything gaudy is not to be seen; they seem quite content to dress according to their means; and I cannot think the fashion changes so often with them as it does here; they generally wear earrings, which in all cases appear good. I am quite at a loss to know where what we call *Paris Fashions* come from, as the difference between what is to be seen here and in Paris is so great—though I am afraid it would take a long time to coax our young women to don the white cap, which looks so nice, and which seems to be the great pride of a French damsel to keep clean. I think, generally, they rise much earlier than our young ladies. Before seven a.m. they are to be seen, nicely clean, low shoes, black dress (perhaps Garibaldi), and their particularly clean cap, occasionally a bonnet, with their basket on their arm, going for the various things of the day.

As to the working men, they generally wear blue loose blouse and trousers, of a material capable of being washed; some were worn in the streets, but I think frequently only at work.

Taking the French people generally, they are exceedingly well-behaved; at the theatre-doors a crowd like at the London theatres is not seen; they stand in a long line, two a-breast; but they are kept in this order by a few police, so that nobody is squeezed.

Nothing in my stay in Paris was more gratifying to me than to see the manner in which they behave, and appear to enjoy themselves, on a Sunday, at Versailles, where, on this day, there are always a great number of persons, all I saw being very respectable. Every room in the picture gallery was crowded to excess, and required a considerable time to go through them, yet, anything like pushing one in front of another was not to be seen. On entering, you take your place, and go gently with the crowd. The splendid battle-pieces occupy most atten-

tion. In front of this gallery are splendid gardens, nicely laid out with flowers, several large fountains, and, in the distance, an extensive lake; along the paths are many very fine, richly-sculptured vases and statues; the vases are very much larger than those at the Crystal Palace (London); adjoining the gardens is a large forest, in which are several splendid long, straight avenues of tall but slender trees, whose branches meet overhead, to walk beneath which when the sun is out is a very great pleasure, and is well appreciated. It seemed very strange to me to be, as it were, constantly under the eyes of the soldiers, for frequently would you meet several of them on guard together, besides which a strong force is always, I believe, at hand. From about three till five in the afternoon the band of the Zouaves performed, in quick time, some lively music, which was listened to by a great concourse of people.

Towards evening, one amusement among the people was for one to blindfold the other, and see how near he or she could walk to an object a little distance off; another was to send up bladders inflated with gas. One fellow laid out four francs in a bunch of them, and let them go up together.

The approaches to these gardens more resembled those to a great fair, than what I am glad to say, we are accustomed to see on a Sabbath-day. There were people with moveable stalls, selling all kinds of photographs, gilt Albert chains; and at one time a man with an organ on a barrow, drawn by a donkey, a boy singing; soon after came another boy (blind), with a smaller organ; besides this, nearly all the shops were open for business, restaurants being most prominent. Towards the evening a regular fair was in full play,—roundabouts, and deafening music, quite astonishing.

To return to Paris. To me Paris has not the appearance of being a great business-place, like London. During the time I was there I did not notice a single heavy waggon loaded with merchandise, as is so commonly seen here. A peculiar kind of cart, with two wheels, much used in Paris, conveying huge blocks of stone from one place to another for building purposes; also others conveying beer or wine barrels and bread (loaves six or seven ft. long, and about eight or nine inches in circumference), these, with the omnibuses and carriages, constitute the general traffic. Another thing I could not help noticing, which was at the railway station—the complete absence of anything like the small trucks in use at our stations for moving luggage to and from the trains. If a person came with a large box, two or three porters had to carry it.

Now as to the homes of the working people. What an Englishman considers, and is proud to call a "home," I believe scarcely exists in Paris. The people do not stay at home, as we do. If one invites another to dinner, almost as soon as it is over they adjourn to a café, where they spend the remainder of the day—wife, children, and all, drinking their wine or coffee; perhaps playing dominoes, cards, billiards, or reading the papers. Some of these cafés are extravagantly decorated; take, for instance, the "Café Parisien." This I believe to be one of the largest, and it is very highly decorated and illuminated. In the centre of one room are about twenty billiard-tables, not less; a hand-rail separates them from the outer circle, where are small round tables and chairs,

with a seat all round the room against the wall; and here will be seen men, women, and children, all very respectable, drinking together, all very quiet and orderly. This they do night after night, so that they really live at the café.

Not being acquainted with the English billiard-rooms, I don't know if I shall be explaining anything new in the sort of thing used in Paris to show how long a party has been playing. Over each table, and generally suspended from the gas-pipe, is what looks like a clock, which is only a dummy, merely a face and hands in a round case, with a glass door, the key of which is carried by the waiters. When a party engages a table, this dummy is set to the time; so that when they leave the waiter has nothing to do but to compare the time by his watch to that indicated by the dummy, which gives him the length of time the parties have been playing beyond dispute.

The occupation of women in Paris, and I have no doubt France generally, is much different to that of ours: in many cases better, others again not at all to be wished to be adopted here.

The French cabinet-makers, as a rule, polish their own work; but the chair and carved-work is generally polished by women, who, I was told, received at M. Fourdinot's rather over 4 frs. per day. This, for female labour, I think is very good, certainly much more than the generality of our females receive for a day's labour. They are preferred to men, as they do the work quite as quick, and generally better. The west-end London cabinet-makers do not polish their work; but other men are employed, who do nothing else. Now, as an advocate for the better employment and remuneration of women, I ask, why cannot females be encouraged to do this work here (there are many at the east-end of London) in place of the men? It would be a great advantage to them and their employers; it is not a business which requires any amount of skill or thought, only care and a little patience; and it is certainly not at all unsuitable for females. The only question I see, that can be raised, is, suppose if you supply the place of our present polishers with women, what would become of the men? What could they then do for a living? What could they do? I own that that is a question difficult to answer, for in too many instances they can do beside polishing (if that can be called anything) comparatively nothing; so that if women were here substituted for polishers, we should have a great number of men out of employment, who are unable to do anything else, except porter's work, &c. Now, of course, to expel these men without there was a chance that they could obtain other employment by which they could support themselves and families, would not be considered charitable or perhaps right, as more harm than good would be done, except to the employers; but cannot for the future women and young girls be taken on instead of men, for I consider a great benefit would be derived if they could be prevented from wasting their time French-polishing, for there is nothing in it to entitle it to that amount of a man's time in which he might and ought to be producing something more substantial and decidedly more becoming him. For this reason the sooner some plan is adopted by which they will be totally excluded from it, the sooner will a lasting benefit be conferred upon our labouring women and young girls,

by which they will be better enabled to maintain themselves in a very respectable manner, at a considerable advantage to their employers: and the men who would be polishers would be obliged to seek other employment in which they would require to use their mental powers, and we might then have something really good from them, instead of, as is the case at present, the faculties of these men lie dormant, and are absolutely wasted.

Another means of improving the condition of our labouring women and young girls, which is adopted in Paris, is to substitute them at the ticket-offices of railway stations. They are found to do the work exceedingly well there. Why should they not here? It is a very light occupation and well suited for them. We have many instances of females employing their time very successfully engraving on glass, wood, &c., for which, be it said to their credit, many make their own designs. This is certainly more difficult than polishing or book-keeping; so that, I think, if they were here encouraged, railway directors would soon rejoice at the change, and extend their employment as much as possible. Not only would this change benefit the class of females who in some way or other are compelled to labour to maintain themselves, but there are many, what I call little gentry, people who have seen better days, who would be glad to accept such situations.

Although the French contribute the best-designed cabinet-work to the Exhibition, it will be noticed that it is very much alike, and contains the same kind of ornament (the French renaissance) and general treatment, one as another. Black being, as it were, quite the fashion, much of this is ebonyised, and thus spoilt. I feel sure that several exhibitors of ebonyised furniture would have received prizes a stage higher, if it had not been for the process of staining, which in most instances quite gums up the fine features, and has more the appearance of having been black-balled than of ebony; others again have brilliantly polished the carvings, which is a great mistake, as they never have such a nice appearance as when left quite dull, or with just a little wax rubbed over them with a hard brush.

A. Latry exhibits specimens which appear carvings, but are made up of pigs' blood and dust, compressed in a steel mould; these are very good and cheap; a medallion, about two inches diameter, with a head in bas-relief, could be had for 2 frs. Throughout the French cabinet-work a much greater freedom in the application of carving is observed than in the English department, figures being very frequently used, either in full or bas-relief. The French carvers do not work mechanically; invariably they make their own models to begin with, receiving only a rough sketch from the draughtsman, it being generally left to their taste to arrange it: so that they work in perfect freedom, with greater pleasure, and thus perfection.

Messrs. Fourdinois exhibit a cabinet profusely decorated with carving, the method of applying which they have patented; the method is this—Take for instance, a panel: instead of merely laying the carving upon the surface, it is cut in a marquetric, allowed to project as required, and afterwards carefully modelled and worked down to the ground; the inside is veneered; when upon thick pieces, as legs, it is let in with

chisel and gonge about 1 in.; the ornament being very fine and delicate, this treatment is absolutely necessary. This piece of work, though awarded the grand prize, is not the best piece of workmanship.

The palm for workmanship must be given to Messrs. Jackson and Graham, of London, whose exhibit is the finest in the entire Exhibition: an ebony cabinet, richly inlaid with ivory, lapis lazuli, and excellently engraved, being the principal production. This will bear the most minute criticism; in fact, the more it is criticised by skilled workmen, the more it will be admired; the mouldings on the doors are exceedingly intricate, but on close examination the mitres will be found to be beautifully perfect. There is no other piece of work in which all branches—cabinet-work, carving, marquetric cutting, and engraving—are so excellently worked out, and combine to make a perfect whole as in this cabinet; and had it not been for the fact that Mr. Graham was a juror, there is no doubt that he would at least have been a recipient of a gold medal. The same with regard to Mr. Grace and Mr. Grobé. They also exhibit a large inlaid tea-table, cabinet for the display of porcelain, &c., a bookcase, several chairs, and piano, all executed with the same amount of accuracy and good design.

Messrs. Lamb, of Manchester, exhibit a very nice inlaid cabinet, which has the misfortune to be overcrowded; also the yollard oak side-board, exhibited in 1862; excellent workmanship.

Holland and Sons exhibit Gothic pieces, the principal being a side-board; as a piece of dining-room furniture I cannot admire it, as it looks too heavy, and more like a piece of rough joiners' work than a fine piece of cabinet-work, which we expect to see in a gentleman's house; it appears too ecclesiastical for household furniture; allowance must be made, however, for this kind of work being seldom got up. It reflects great credit upon the exhibitors, but I would suggest a little refining.

Messrs. Trollope and Sons exhibit, slightly altered, the cabinet which was in the London Exhibition of 1862, and a very nice inlaid octagonal table, the carving of which is waxed, and quite equal to any in the Exhibition.

Messrs. Gillow exhibit excellent workmanship in a black bookcase, which has a recess each side of the centre, to receive a figure of Milton and Shakespeare.

Mr. Grace exhibits a very fine walnut cabinet, on trusses, richly carved; in the centre of the door-framing is a little inlay of ivory, which well defines it; also an inlaid fancy cabinet, and a very nice inlaid Gothic card-table.

Wright and Mansfield exhibit a large satinwood cabinet, with gilt moulding, in the Adamite style, for which they have been awarded a gold medal.

Messrs. Hunter have a very nice wardrobe and toilet-table, in ash and grey maple, inlaid with ivory, with several plaques of Wedgwood ware introduced in the frieze, door panels, and plinth; centre door, glass panel.

Messrs. Heal and Son exhibit an excellent suite of bedroom furniture, in satinwood, also in polished deal; these things have a very gay and appearance.

Messrs. Dyer and Watts exhibit very excellent bedroom furniture, which is second to none in the building, of the kind.

The exhibits of Messrs. Whytock, Filmer, and Howard (who exhibits the bookcase of 1862) are also well worth inspection.

Semey, of Paris, exhibits a splendid ebonised bookcase, for which he has gained a silver medal, which might have been a gold one had he bestowed more attention upon the finishing, especially upon the carving, which is polished.

M. Gueret's bookcase is a very fine monument. An attempt has been made to polish the rich carving, which gives the appearance of having been black-leaded.

Jeanselme exhibits a large bookcase: the centre of the upper part is enclosed by two doors; much of the carving is sunk in the groundwork, not projecting.

Ribaillier has a very nice purple-wood hall-table, with round ends; the upper part consisting of a centre carcass with a shelf at each side, and one door consisting of artificial flowers, supported by two dogs in front, and a framed panel with pilasters at back. I think others will agree with me when I say, purple-wood is much more effective when used with other woods than in a large mass by itself.

From Vienna we have a novelty: it consists of a table, sofa, two easy and six small chairs, in white tubular metal frames, decorated with gilt nail-heads and rosettes. The centre of each back is circular, and carved with a violet material, having a red flower and leaves embroidered in the centre. The back of the sofa has three circular cushions. Together they have a nice appearance, but rather cold.

P. Sormani exhibits a splendid ebony cabinet, about 4 ft. 6 in. long; the front is divided into three panels, top centre one glass; on either side is an enamelled plaque, with dark-blue ground. This is an excellent piece of work, both artistically and for workmanship.

P. Mazareo exhibits a well-carved chimney-piece and a sideboard, the cabinet-work of which is only middling. The design is good, rather out of the ordinary kind. It has circular ends. The front-end breaks are circular, to admit of a figure about 3-ft. high, which inclines to the pilaster of the upper part, on either side of which are Greek fluted columns, which support the cornice. The lower part has one large door, the panel of which is richly-carved with figures in bas-relief. On the pilasters are carved bulls' heads.

Richataedt has a splendid walnut bookcase, about 12 or 14 ft. long, the design and workmanship of which are excellent.

Chaix exhibits an ebony wardrobe, consisting of a centre part, the ordinary height, with a glass panel, and on either side is a wing, only the height of cabinets, about 3 ft. 2 in., attached; also a bedstead.

In the Italian court we have a fine table by Gatti. This ranks among the most artistic productions in the Exhibition.

To enumerate all the pieces of excellent work exhibited in this class would occupy a volume of itself. I have therefore selected a few of the principal objects, though there are very many more quite equal to those I have named.

WOOD-CUTTING MACHINERY.

By WILLIAM WALKER.

HAVING visited the Paris Exhibition for the purpose of examining machines in connexion with wood-cutting, as my duty I submit the subjoined report.

I find that within the last five years certain improvements have been made, namely, in the construction of portable and locomotive machines for sawing wood in the forest, the application of the endless ribbon saw to the cutting up of round timber, and in the employment of the twisted screw-formed blades in planing, also in the better formation of tools used in planing and boring; now I consider the improvements are few, when compared with the many that were made during the five years previous to the International Exhibition held in London in the year 1862.

The undermentioned are the names of the principal exhibitors, and claim to be placed in the following order:—

GREAT BRITAIN.—S. Worsam and Co., Robinson and Son, Powis, James, and Co., Chas. Powis and J. Green.

PRUSSIA.—Zimmermann.

FRANCE.—J. Perin, P. Arbey, Mongin and Co., Sautreuil, Dupriez, E. Lucas, Baulat.

AUSTRIA.—The Government and A. Ganz.

AMERICA.—Armstrong, Emerson, Miller, and Witney.

Now, to perform the first mechanical operation on logs or large timbers of a felled tree, by separating them into beams or deals, so as to give them a commercial shape and value—the sawing machine is generally employed: it may be classified in three distinct kinds, according to the sawing blades. First, the reciprocating one, provided with blades of a certain length, secured by their ends to a reciprocating frame. A machine of this description is exhibited by Perin, the side frames of which are exceedingly weak, having the crank and also crank-shaft, with fly-wheel, fixed on top of frame. The wood is brought to the saws by means of a rack, and held down by a pressure-frame, some ten or twelve feet long, under which the timber slides; a machine precisely similar is shown by L. Bandar, but roughly made, being a combination of wood and iron, one great fault in machines shown both by France and America.

Secondly, the endless blade, consisting of a continuous dentated ribbon, mounted on two revolving pulleys, which are covered with

common leather, and then another covering of buff leather is placed upon them to receive the ribbon saw, which, if inclined to run off, is prevented by a slight cant given to the pulleys; a machine of this kind was exhibited by J. Perin, who was the introducer, if not the inventor of the endless-band saw: it is adapted for sawing square timber into boards or planks of any required thickness. The timber is brought up to the saw by means of a series of fluted plates, secured to a band, revolving round two spindles, projecting through the horizontal table: similar machines are exhibited by Chas. Powis, and also by Powis and James. In that of Chas. Powis there is a fret-saw attached, which seems to me rather in the way, as it would have to be removed when using the band-saw on most occasions. Both these machines are commendable for good workmanship, yet I do not consider them well designed.

There is also a band-saw exhibited by Dupriez which differs from the last-mentioned in this respect—the pulleys revolve in a hinge frame, so by a simple arrangement the ribbon saw can be thrown into a position to enable them to cut any bevel, the speed of the pulleys being 350 to 400 revolutions per minute.

The third kind of blade employed in the cutting of wood is the circular one, consisting of a thin steel plate, toothed at its circumference, mounted on a rotating shaft. A machine of this kind, manufactured and exhibited by Robinson and Son, termed a self-acting cross-cut saw bench, intended chiefly for cross-cutting deals, scantling, and planks to any required lengths, and squaring off the ends to the greatest nicety: the saw-spindle is fitted into a swing frame; the saw is brought up to its work by a self-acting movement; and by another self-acting arrangement the saw, after completing the cut, retires without attention on the part of the workman. Now I consider in a bench of this kind, where the saw moves backwards and forwards in a slit in the table, there must of course be a great waste of time when we remember that during the time the saw is retiring, work is entirely suspended. There is one thing more that I must complain of, namely, the feed-motion is driven off a shaft quite independent of the machine, so that when the saw comes in contact with any hard substance, such as, for instance, a knot, it must of necessity decrease the speed of the saw, while the feed goes on the same as usual; such being the case, a breakage of some kind is likely to take place. Yet I confess that in the whole of the machines exhibited by Robinson the work is good.

On a small scale E. Lucas shows a fret saw, or reciprocating blade, which, passing through a small hole made near the centre of the cast-iron horizontal table, is moved at the back of the framing, by a crank and connecting rod. One capital contrivance in this machine is, the saw can be turned completely round while in motion; the arrangement consists of a long perpendicular rod placed at the back of the machine; at the lower end is fixed a sheet-iron disc, about 18 in. diameter: the rod is connected to the saw by small spur-wheels, which gear into wheels similar to those on the lat, being secured to loose collars, through which the sliders work; the position of the saw is changed by placing the feet upon the disc, and thus turning it in the direction required, so that the wood that is being operated upon remains stationary. This little machine is very con-

venient for inlaying, and especially in open work, the blade being easily disconnected and passed through the small hole made in the wood to be open work.

A good assortment of machines is exhibited by Sautrenil, including a moulding-machine, squaring-up machine, and a rebating and grooving machine.

A superior collection of wood-cutting machinery is exhibited by S. Worsam and Co., including universal moulding machine, trying-up machine, general joiner, also models for wood and stone sawing; their universal moulding, shaping, and recessing machine is capable of application to a vast variety of purposes, and is certainly one of the most labour-saving machines ever invented, and deserves to be more extensively noted and employed in our wood-working shops. It possesses one great advantage over other upright cutting machines—the work can pass under the tool, and thus it is enabled to work in the centre of a board; among the many purposes for which it is adapted may be reckoned cutting circular or twisted mouldings of any form; sticking circular and straight sash-bars; moulding, rebating, and grooving straight or circular sash-frames; also cutting a moulding round raised door-panels, and for sinking recesses of any form to a pattern. The machine consists of hollow framing, the cutter overhanging a great distance, which allows the work to be moved about freely in any direction upon the table. The top cutter-spindle works in a carriage which can be raised or lowered by a lever, the carriage being counterbalanced by a spring, which makes it sensitive and easy to work. A back slide is added, worked by a screw and hand-wheel, by which the vertical range of the cutter can be very much increased. The ends of the cutter-spindle are screwed on the outside to take a small adze block, to which moulding irons of any form can be attached, and it is bored up to receive cutters for chasing, recessing, or boring. There is also a second cutter-spindle working below the table, but can be brought above it by a hand-wheel. This cutter revolves in an opposite direction to the top one, and is useful for certain work. The general joiner is a most ingenious machine, and is capable of sawing, tonguing, rebating, tenoning, boring, moulding, cross-cutting, and squaring off; and, as an improvement on the one exhibited in the International Exhibition, they have supplied the machine with mortising apparatus. The machine consists chiefly in a circular saw bench, fitted with saw, driven at the average rate of 2,000 revolutions per minute. The table can be raised or lowered with the greatest ease, so as to have the saw at a proper height when cutting a tenon, or that the depth of a groove made may be of the required dimension. If a cavity is required wider than the saw, it is still cut by the same saw, made drunk for the purpose. The table carries a parallel fence, which, by a proper inclination, is enabled to guide at any angle. The wood is cramped on a sliding saddle, for moulding or rebating. The saw is substituted by a cutter-head fitted with special irons, and the end of the spindle is bored to receive an auger or mortise chisel exactly similar.

Machines are shown by Charles Powis and also Sketchley; but for finish and design I should prefer the one exhibited by Worsam

and Co., for not only is it commendable for good construction, but it is to be praised for excellent workmanship.

Several well-made machines are exhibited by Zimmermann, including a trying-up machine, which resembles one constructed by S. Worssam and Co. These machines are made for planing and trying up scantling of hard or soft wood; and, however warped or twisted the wood may be, it leaves or should leave the machine true and ready for gluing.

The cutters are secured to wrought-iron adze blocks, and revolve at a very high speed: and cutters of any shape may be fixed to them, so as to cut a moulding bead or rebate upon the timber at the same time as it is being planed.

The table is entirely of cast-iron, planed all over, and in that of Worssam's is fitted, at intervals of 4 ft., with improved screw-cramps, with gun metal nuts and wrought-iron fangs, by which the timber is firmly fixed. Now in that of Zimmermann, the wood is driven on to a number of short spikes, and further held down by means of a moveable cramp at each end. Now this method of holding the wood is defective, and must have the tendency to spring the wood, consequently the work cannot leave the machine true, as in the case of Worssam's, where the wood is held by the sides. The tables are worked by a self-acting feed motion, giving them a forward speed equal to 12 ft. per minute, and taking them back much faster.

Now, to form a moulding on the edge of a board, the machine exhibited by Robinson and Son will do the work with great convenience. It is remarkable for several good contrivances. The feed-motion, being obtained by a worm and wheel, is simple and compact. The four sides of the moulded piece are finished at a time, being operated upon by four revolving cutter-heads. The cutter-block spindle and frame in which it works is made to cant, so that when cutting a moulding much deeper on one side the cutter need not have such a great difference in size between the two ends. Now, I do not consider that there is any advantage gained in being able to slant the upper cutter-spindle; for this reason—they are obliged to use a number of independent cutters to form one moulding, consequently it must take a long time in setting the cutters.

Now, in machines such as Zimmermann's, in which the ordinary moulding irons are used, namely, two instead of one, the work leaves the machine much cleaner, for this reason—the cutters pass over the work as often again. Now, as regards workmanship, this machine is everything that could be desired.

Arbey and Co. also exhibit a trying-up machine, which differs from S. Worssam's and also Zimmermann's, in the particular form of cutter used. Instead of the plain flat knife, they have introduced the twisted, screw-formed blade or cutter; and as there is a difficulty in keeping this cutter to the proper form for planing a flat surface, a self-acting grindstone is attached to the machine. The stone is carried by a frame which travels across the machine parallel to the axis of the cutter-block, which is disconnected from the driving-pulley for this purpose. On the lower part of the frame, and under the grindstone, is a rest, against which the cutter-block is pressed by a weight attached to a pulley on the spindle. The grindstone is moved across the machine by means of a screw, while

the cutter, on account of its form, is caused to revolve by the pressure of the rest. In this manner the true spiral form is given to the edge; the work is cramped to the table, which travels at the rate of twelve feet per minute, under the cutter. For planing thin boards the table can be fastened, and the feed is then given by a roller.

Now, in Worssam's machine, from the peculiar construction of the cutter-block, they are able to use the plain flat knife, instead of the twisted screw-formed blade, which gives so much trouble in getting the proper form to do the work and in sharpening them afterwards. The plain flat knife requires no skill in making, and is easily ground and kept in order, and, when fastened to a block, presents the cutting edge at a greater angle than that of the twisted knife, and consequently does the work much cleaner.

129.2 One of the most frequent operations on timber, when it is required to connect several pieces together in a solid and compact manner, consists in cutting a rectangular cavity or mortise, into which a corresponding projecting piece, or tenon, might be introduced. The mortising machine is suitable for this purpose, being capable of working on hard or soft wood, and may be used for boring iron.

Chas. Powis and J. Green exhibit machines of this kind, but Green's machine differs from many others in having a cutting table, but without boring apparatus. The chisels are brought down by means of a lever, until the proper depth is reached and the required distance traversed. The chisel can be turned round and the cutting repeated in the opposite direction. These machines are sought after by small wood-workers, and are considered favourites on account of their cheapness and manifold usefulness.

A combined moulding and planing machine, produced by Powis and James, is capable of forming mouldings nine inches wide by four inches thick; it is fitted with four revolving cutter-heads, working outside the frame, and has also patent variable feed gear, which enables the workman to regulate the feed in inches to the greatest nicety without stopping the machine. The feed rollers are worked by a friction-pulley, which presses against the face of a revolving disc. After carefully examining this machine, I find that it is too narrow; and although the framing is cast in one piece, which gives strength and solidity to the machine, yet I think it would be much better if the distances between the bearings were greater, so as to prevent vibration, which would be likely to take place in a machine of this kind.

There are four exhibitors of dovetailing machines, namely, the Austrian Government, A. Ganz, J. Zimmermann, and Armstrong. Those shown by the first three are somewhat alike, having revolving cutter-heads. One great fault in them is, that there is no means adopted for expanding the tools as they wear: and I consider them fit only for rough work, such as packing cases, &c. The machine constructed by Armstrong is original. It consists of two revolving discs, with teeth upon their inner faces, working upon studs fixed at a certain angle, so that one disc gears into the other. Within two inches of the circumference of each disc is cut a worm, of inch pitch, on the face of which is bolted segments of a saw, each segment being placed further from the disc than the one that precedes it.

the last two or three segments are bent over, those on one side to the right, and those on the other to the left, so that as the discs revolve, one saw cuts the dovetail on one side the proper length and one-half the width, and the other in like manner completes the dovetail. The wheel is cranked to a table moved forward by means of screws of inch pitch, corresponding with the pitch of the saw. This machine will no doubt prove one of the most useful machines yet invented, and may be considered far superior to any other dovetailing machine in the building.

In the American department there are three machines exhibited by Wansy, for barrel-making. The first consists of a circular saw, the inner side of which is of a convex form; on the same side, close to the saw, is fastened on a spindle a cutter, the object of which is, that after the saw has cut the ends to the proper diameter, the edges are brought into contact with this cutter, which chamfers them ready for stave ends. Another machine prepares the staves, cutting them off to a certain length, and at the same time cuts a groove in each end, being brought up to the saw by an endless chain. The third machine consists of a small planing machine, which is used in planing the edges of staves, a number of them being bolted or cranked together in a frame, and planed simultaneously; the frame traverses a hollow bed. The whole of these machines are roughly made, and will do only for the construction of barrels of one size.

A capital plan of inserting teeth in circular and other saws, is the form of tooth adopted and exhibited by J. Emerson, which is of an oblong shape, having a **V** groove filed on the edge of the tooth, and a corresponding **A** groove is filed in the saw; and the teeth are further secured by means of a rivet, one-half of which is in the saw, and the other half in the tooth. Miller's plan is somewhat similar, the only difference being in the form of tooth, that of Miller's being round instead of oblong. The idea, I learn, is not new, but that it was known in America some thirty years ago, and found not to answer.

Now, in concluding my report, I should be sorry to allow the present opportunity to pass without offering my sincere thanks to the Society of Arts for their kindness, and also to the officials acting under them at the Paris Exhibition, who rendered every assistance in their power to make my visit one of pleasure and profit.

WOOD-CUTTING MACHINERY.

BY THOMAS J. WILKIE.

THE subject upon which it is my duty to report is one of the greatest importance to the world at large, as wood is a material so extensively used in the arts, that progress towards the perfection of the machinery for working it is decidedly necessary: and it is only at Exhibitions such as this that one can form a just estimate of what improvements have taken place, and what is still necessary to the perfection of such machinery. Let us take a glance at what has taken place within the last few years. At the former Exhibition of Paris, 12 years ago, it appears there were but few machines of the above class, and those exhibited were of a very imperfect type. Now, at the International Exhibition in London, in 1862, there was no lack of machinery for wood-working, and great improvements appear to have rapidly taken place; in fact the improvement in this branch was perhaps more remarkable than in almost any other branch of mechanical engineering. Now, improvements from 1862 to 1867 do not seem to have progressed at the same rate as from 1855 to 1862. I do not mean to say that improvements have not taken place; on the contrary, there is a great improvement in many classes of machines,—perhaps most noticeable in compound machines, or machines for performing various operations. This apparent slower rate of improvement may perhaps be partially accounted for in this, that the nearer any machine approaches to perfection, the less observable will be any minor improvement in construction.

I have been writing about improvement, but that word is scarcely applicable to all nations who exhibit this class of machinery; perhaps the only two which really deserve it are Great Britain and Prussia. I do not wish to put France or America in the back-ground, or say that they had no improvements; as for America, a certain Mr. Armstrong, of New York, exhibits a dovetailing machine, the mechanical contrivance of which is, perhaps, the most novel invention in this class in the Exhibition. Of this I will report more fully hereafter. But taking the generality of French and American productions, they are constructions of wood and metal combined, which may do very well for a time, but constant wear and contact with the atmosphere must necessarily cause the woodwork of the machine to become unstable, and thereby render the machine useless; and although they may be able to make these machines of combined wood

and metal far cheaper than any machine made solely of metal, they do not last one-sixth of the time, nor is the work turned out at all satisfactory, especially in machines the cutting-tool, or, in fact, any part of which revolves or moves at a high velocity, which is the case with most wood-cutting machines; and in these days of science it is strange that Frenchmen and Americans cannot see the evil of introducing wood in the construction of such a class of machinery as this, where the utmost rigidity of parts is necessary to produce anything like satisfactory results.

Let us look now in what way more particularly the improvements have been made. The evident tendency of machinery, when improved in the right direction, is to become more and more simple in its arrangement; and I think if we look more particularly at the two nations I have mentioned, viz., Great Britain and Prussia, we shall find that this has been carried out of late, for there appears to be a greater absence of complex mechanical arrangements than heretofore; also that they have become every day more exact in their mechanical contrivances. Now I will put in a good word for France. Some of her makers of saw-mill machinery have now commenced the construction of locomotive and portable machinery for sawing wood in the forest, by the application of the endless band-saw to the cutting up of round timber, which seems particularly adapted for that purpose, as far as portability is concerned, as the frame-work of a band-saw does not require to be so heavy as that of a reciprocating vertical saw-frame, whose frame-work must necessarily be heavy, to resist the tremendous strains to which it is subject when running at a high velocity. They have also begun to employ helicoidal blades for planing wood. The work done by these cutters is good: but that is counterbalanced by the time required to sharpen them, and, after all, the work is not so smooth as that done by a planing machine with stationary knives. The tools for boring and planing have been modified of late, and a greater rapidity of rotation given to many, causing them to give decidedly better results. These are the principal improvements which have taken place generally in wood-cutting machinery. We will now notice what has taken place as regards the various classes of wood-cutting machines respectively.

SAWING MACHINES.

To perform the first mechanical operation, and give a commercial shape and value to logs or large timbers, by separating them into beams or deals, the sawing machine driven by power is ordinarily employed. It may be classified in three distinct kinds, according to the form of sawing blade: 1st, The reciprocating one, provided with blades of a certain length, fixed by their ends to a reciprocating frame. 2nd, The endless one, consisting of a continuous dentated ribbon, mounted on two rotating pulleys. 3rd, The circular one, consisting of a thin steel plate, toothed on its circumference, and mounted on a rotating shaft. There is a fine saw of this class exhibited by Worssam and Co., intended for one of their large rack saw-benches. There is also a large circular saw, stated by the maker to be the largest ever constructed, being 88 in. in diameter, after Emerson's patent (America), each tooth being capable of removal—

a very good arrangement for large saws; as in the case of breakage of any one tooth in an ordinary saw all the rest would require to be cut down to suit the broken one; but with this saw a new one might be inserted.

As regards timber frames, there seemed a great absence of these machines at the Exhibition, or at least of noteworthy ones.

There was one exhibited by a French firm (Sautreuil and Co.), the frame-work of which did not seem sufficiently strong for the size of work it was intended to do; but it was supplied with two well-designed timber carriages, and the workmanship was better than the generality of French machines of this class. With this class ought to be mentioned the single reciprocating saw (commonly called the fret-saw), being a very narrow saw, intended to cut fine inner ornamental work.

Robinson and Co. exhibited a well-designed little machine of this class, commended for good workmanship.

E. Lucas, of France, shows a fret-saw, fitted with an arrangement for turning the saw round by means of a disc actuated by the workman's foot, thus avoiding the necessity of turning the wood so much. This is the only commendable point in the machine. The endless band-saw is well represented, almost every nation showing some of this class of machinery.

Powis, James, and Co. exhibit several well-constructed machines of this class; but they do not seem to have studied beauty of design at all for the frame-work. They also show a combined band-saw and fret-saw machine, a very convenient arrangement for small establishments where space is an object; but it has this drawback, that the band-saw cannot be used at the same time as the fret-saw. It is needless to mention other band-saw machines, for they are all constructed upon one principle; but English machines have decidedly the advantage over other countries as regards workmanship and design.

J. Gail, a French exhibitor, shows a very well-arranged portable band-saw machine for cutting round timber, consisting of two band-saws arranged vertically, one on each side of the timber to be cut, which is fed by means of a rack and pinion wrought by self-acting ratchet-wheels. Each saw is fitted with adjustment for cutting the logs the required thickness. The framing of the machine consists of a good piece of wrought-iron girder work, well-adapted for locomotion, as it is far stronger in proportion to its weight than cast-iron. The machine is constructed to work on the wheels by which it is conveyed from one place to another, so that it can be set to work as soon as it has arrived at the place of action, by passing a strap from a portable engine, or other motive power, round the driving pulley of the machine. The design of the machine is good.

Robinson and Co. show a very good plain saw-bench, workmanship good, and the framing all in one casting, well-proportioned; also by the same makers, a cross-cutting saw-bench, the saw arranged in a swing carriage self-acting, having a quick return motion, and supplied with means for varying the stroke; altogether a well-constructed machine, but it has this drawback—the self-acting feed is driven from an independent shaft, not from the saw spindle, therefore if, in cutting a hard log of timber, the saw should by any means slacken speed, the feed will

continue at its usual rate, and thus of necessity some part of the machine will most likely be fractured.

Charles Powis exhibits a self-acting saw-bench, with rope feed supplied with canting-fence, pressure-roller, &c., for deals. Workmanship and design somewhat inferior to the foregoing machines.

PLANING MACHINES.

In the progress of the economical conversion of wood by machinery, it is but natural that planing should have been the operation next thought of by tool-makers, as it is the next after sawing to which wood is subjected in common hand-practice. The planing-machine exhibited by Waresan and Co.—or more properly the trying-up machine, as it is intended to true-up boards and timber, to give them true and good planed faces or edges, as the case may be, ready for gluing up, rather than giving them a very glossy appearance—is of very superior make, consisting of a planed cast-iron table, fitted at intervals with improved screw cramps for holding the wood, travelling under an adze block of wrought-iron, which is so planed that the cutters do not strike the wood with the whole length of their cutting edge at once, but gradually come on to the wood, and as gradually leave it, thereby giving a good smooth surface: the cutters having a somewhat similar action to the helicoidal blades of Arbey's planing-machine (French), but possessing this advantage over them, that, being simply straight irons, they are easily sharpened and replaced, and are not liable to get out of order. The adze block is also provided with adjustment to take up the wear, so that it may be always kept perfectly rigid in its bearings. The machine is provided with self-acting feed-motion, with variable speed pulleys to suit different kinds of wood, and is altogether the best designed and well-constructed machine of its kind, planing wood of about 12 inches wide at the rate of about 15 feet per minute.

Zimmermann exhibits a machine of somewhat similar construction, but not so compact or efficient in design as the foregoing machine; it is to be praised for excellent workmanship.

MOULDING MACHINES.

The preceding machines are more particularly intended for planing flat surfaces, but in order to plane a moulding, a separate machine is usually employed, having top, bottom, and side-cutter blocks, to be used, as occasion may require, for various designs of moulding.

Robinson shows a very well-designed moulding-machine, with top, bottom, and two side-cutter blocks, arranged with variable feed-motion, and rollers for various kinds of work; the top-cutter is fitted in a canting frame, which is patented, and which is evidently intended for cutting deep mouldings, or mouldings which are thicker towards one edge than the other; but it appears to me that there are many forms of moulding for which, while the block is canted, he is obliged to use separate cutters to form each line of the moulding, which is a decided disadvantage, as by making use of so many different little cutters, it takes a long while to set them; moreover, with an ordinary cutter-block, with its axis set parallel to the table upon which the wood

travels, one is able to use two moulding irons; thus each part of the cutter comes in contact with the wood twice as often as when one cutter is used (which is virtually the number used on the patent canting-block), thus producing finer shavings, and, consequently, more regular and smooth mouldings; but, with the exception of this, it is a well-designed and well-constructed machine.

Zimmermann also exhibits a similar machine, which one might imagine to be a copy of the above, the likeness is so striking, with the exception of the canting cutter-block: also commendable for good workmanship.

Powis, James, and Co., show a side-moulding machine, with top cutter-block projecting over the table some 10 or 12 in., having both the bearings, therefore, at one end of the cutter-block; this arrangement does very well for narrow mouldings, of, say, 4 or 5 in. in width, but for the width this machine is evidently intended to cut, it is decidedly a bad arrangement: it would have been far better arranged as it is, if the bearings had been further apart; now, should there be the slightest play in either bearing the cutter-block must of necessity feel it, revolving at such a high velocity, and, consequently, the moulding produced would be uneven and full of ridges. The machine is provided with variable feed-motion, and also two side cutter-blocks.

There are several moulding machines exhibited by French makers, but most of them are complicated, and the workmanship not all what could be desired. The foregoing machines are intended for straight mouldings, but there are many mouldings which require to be cut on curved edges of wood, as, for instance, curved sash-bars; there are several machines exhibited for this purpose.

Zimmermann shows a very well-constructed little machine, consisting merely of an upright spindle, standing up through a flat-plated table of cast-iron, carrying a moulding iron, and revolving at a great velocity, having an arrangement for raising and lowering the spindle to suit the different thicknesses of wood upon which the moulding is to be cut. This machine is to be praised for good workmanship. It often happens, however, in cutting curved mouldings, that the moulding is in such a position with regard to the wood, that a machine having only an under cutter-block of the above description, is not able to cut it; as, for instance, cutting the rebate and moulding on a curved sash-bar, it would not be advisable to put the rebating-iron on the same spindle with the moulding-iron, otherwise the great jar occasioned in cutting the rebate would seriously affect the moulding being at the same time cut. To remedy these evils has evidently been the object of an English tool-maker since 1862, for Worsam and Co. exhibit an entirely new machine, with an overhanging cutter-block and spindle, as well as a cutter-spindle, rising through the table, one spindle exactly over the other, so that they may be used separately or simultaneously, according to the kind of work required to be performed; each spindle is supplied with independent rising and falling motion: the machine is likewise intended for recessing, or cutting mouldings or recesses in the centre of boards, or cutting the housings in string-boards, for stairs, &c., and is supplied with every contrivance to render it the most complete and novel modification of a mould-

ing machine for straight or irregular work yet invented. As for the workmanship, it is all that could be desired for rigorous exactitude and finish.

Perin shows an irregular moulding machine, but it is merely of the older type, a spindle rising through a table.

MORTISING AND TENONING MACHINES.

One of the most frequent operations on timber, when it is required to connect several pieces together in a solid and compact manner, is to cut a rectangular cavity (or mortise), into which a corresponding piece (or tenon) may be inserted. In several cases this slot is terminated by a semi-cylindrical form, and then a slot-boring tool can be used with advantage in any machine with a revolving spindle, and fitted with an apparatus for carrying the wood to be operated upon, but the necessity of rounding the edges of the tenon has caused this course to be less favourably received, and all engineers do their best to find a good tool and machine for making square-ended mortises; but they all, more or less, seem to imitate mortising by hand, some using chisels like an ordinary mortise-chisel, others with chisels similar to a mortise-chisel, but recessed from one side towards the point, thus forming three taper-cutting edges; and also provided with indentations parallel to the cutting edge, to draw out the chips when cut. The majority of power-mortising machines exhibited are provided also with a boring spindle to be used for boring holes generally, or to bore a hole from whence to begin a mortise.

Robinson and Co. show a very well-designed and proportioned power-mortising machine, with good solid bed, the table carrying the wood travelling on it by self-acting arrangement, the cutter-slide being constructed so that the connecting-rod may be adjusted at any position to suit the different thicknesses of wood to be operated upon. The machine is also provided with a throw-off lever and brake, in order that the chisel may be stopped at any required part of the stroke. There is also a boring spindle attached to the machine, fitted with various speeds, and it is altogether a strong, well-constructed machine.

Zimmermann exhibits a machine of similar construction, equally commendable for good workmanship and design.

Powis, James, and Co., show a machine of somewhat similar construction, except that the framework carrying the chisel-slide and the boring-spindle rises and falls to suit the different thicknesses of wood, and is therefore not so rigid and suitable to resist the sudden strains to which this class of machine is subject as the two former. There is an endless number of hand-mortising machines exhibited.

Green, of Leeds, shows a well-designed machine, the chisel-slide being actuated by means of a toothed wheel (to which motion is given by means of a hand-lever), running into a rack on its anterior face; the table is supported on two trunnions, so that it can be canted to cut the ends of the mortise at right-angles with the surface from which the mortise is made, or to form a mortise having the ends slightly tapered, to receive a wedge as well as the tenon; an arrangement which few makers seem to take notice of.

Powis, James, and Co. exhibit some fair specimens of hand-mortising machines, adapted for tenoning and boring also.

C. Powis and Co. show one for mortising the naves of wheels, as well as for performing the other processes.

Robinson and Co. show a well-designed self-acting tenoning machine, for general work, with two horizontal cutter-blocks, each with independent rising and falling motion, driven by a strap passing round the two pulleys, tightened by means of another adjustable pulley. It is provided with a table, upon which several pieces of wood may be cramped at the same time. To the machine is attached an upright spindle for cutting double tenons, or for scribing tenons; this machine is to be praised for good workmanship and design.

Powis, James, and Co. show a small machine, with merely two horizontal cutter-blocks, the table to be worked by hand; and there is an absence of an upright spindle, which renders the machine useless for cutting double tenons, or for scribing a single tenon; the strap is tightened on the pulleys, in the same manner as the preceding machine. The workmanship is very fair.

Perin shows a somewhat similar machine.

DOVETAILING MACHINES.

In order to join four pieces of wood at their ends, to form the sides of a rectangular box or case without the use of nails or screws, dovetailing is usually resorted to. There were many machines for performing this operation shown at the Exhibition, but most of them upon old and complicated principles.

Zimmermann exhibited a very well-constructed little machine, but old in design, each dovetail being cut with a separate revolving cutter; but it had this disadvantage, that the cutters, when a little worn away by sharpening, would have to be replaced by new ones, as there was no means of expanding them to allow for wear; otherwise the machine was good, and the workmanship all that could be desired. There were two other machines of this class exhibited; the one by Ganz, of Austria, the other by the Austrian Government, both of which were complicated in mechanical contrivance, and only suited for very rough work.

The American machine exhibited by Armstrong, of New York, is decidedly the best and most novel machine of its class, and is in nearly every point original. It consists of two cast-iron discs, having on the face of each, within one inch of the circumference, teeth cast, and having also cast on their periphery a worm, consisting of merely one revolution of one-inch pitch, this worm being two inches deep. Upon the face of it is bolted segments of a circular saw, each segment being placed further from the centre than the preceding one, so that as the disc revolves, the saw cuts deeper and deeper into the wood, until the required depth of the dovetail is cut; the last three segments of saw are bent over at right-angles to the face of the worm, on the one disc to the right, and on the other to the left, from nothing with a gradually increasing lap, so that one disc cuts half across the bottom of the dovetail, and the other in turn the remaining half. These discs revolve on two separate pins, each at an angle, say of 60°, to the face of two small discs, capable of twisting

on their anterior faces about their centres for adjustment, having the faces opposite upon which the pins are set, and the plane of their faces parallel to one another, and at right-angles to the plane of the table upon which the wood to be operated upon is cramped; this table, placed horizontally in the plane of the centres of the adjusting discs, is actuated by means of a screw of one-inch pitch, corresponding with the pitch of the worm on the discs. Now, it is evident these two pins, being each at an angle of 60° to two parallel faces, and having the same relative position to their respective faces, that is to say, if one pin points upwards, or has an inclination in that direction, the other shall have an inclination in the same direction, they must, of necessity, have an inclination to one another of 120° , therefore, when the two sawing discs are mounted on these pins, they also will incline to one another on one side, their axes being at right-angles to their faces; now they are so placed that the teeth cast on the face of one disc by this means gear into the teeth cast on the face of the other. Motion being given to one disc, they consequently both revolve, and at the same time motion is given to the screw actuating the table, which, being the same pitch as the worm on which the saw is bolted, moves at the same rate, the saw on one disc cutting the one side and half the bottom of the dovetail, and as the wood advances the other disc comes into operation, and cuts the other side and the remaining half of the bottom of the dovetail; by this time the first disc has commenced cutting the second dovetail, and so the operation continues. In order to cut out the dovetail, the discs must stand at an angle with the edge of the wood where the dovetail is to be cut (the angle being the angle that the side of the dovetail makes with the edge of the wood); and to cut the pins to fit into the dovetail, the sawing disc must stand at the like angle with the plane of the table. Now, suppose the sawing discs are in the position to cut the dovetail, in order to give them the relative position with regard to the table for cutting the pins to fit the dovetail, it is merely necessary to give the two small discs, that carry the pins upon which the sawing discs revolve, a quarter of a revolution (each in the same direction), and the desired result will be obtained, or *vice versa*. The only drawbacks to this machine are, 1st, that it must of necessity cut the bottom of the dovetail in a curve whose radius is that of the sawing disc, which will, of course, be slightly perceptible in thick wood; and 2nd, that the machine will only cut dovetails of a given distance apart, not at any required distance; but notwithstanding this, it is decidedly the most novel and original invention in this class of machinery in the Exhibition.

COMBINED MACHINES.

Under this head are to be classed those machines which are constructed for performing the various operations required by the users of wood. The most noteworthy of such machines is the general joiner, which has been invented for doing nearly every operation formerly performed by hand, such as sawing, planing, moulding, grooving, mortising, tenoning, as well as an infinite variety of other operations. A machine of this description is exhibited by Worssam and Co., the most complete of its kind in the Exhibition; it has been greatly improved since 1862. At

that time, on one side of the machine there was merely a boring apparatus, but now that portion of the machine is greatly improved by the addition of a most elaborate arrangement for mortising; the self-feeding motion, actuated by means of a V-grooved wheel and paul, can be adjusted to the greatest nicety, to suit the different kinds of wood or size of mortise; it is also fitted with stops to regulate the length and depth of mortise; this part of the machine is fitted with an independent rising and falling table, so that it possesses the advantage of allowing two men or a man and boy to be working at the machine at the same time, and thus do the work, as stated by the makers, of fifteen skilled workmen. There have also been several improvements and additions to the other part of the machine for planing, moulding, grooving, tenoning, &c. As regards workmanship and design, this machine is such that the most scrutinizing eye could find little or no fault with it.

Powis, James, and Co. exhibit a very well-constructed general joiner, but it is far more limited in the variety of its operations than the former machine: it is not supplied with a mortising apparatus. The saw-spindle is merely mounted in a slide, with rising and falling motion, which is not so rigid as if the bearings were in the framework of the machine.

Charles Powis and Co. exhibit a machine somewhat similar to the first-mentioned; the framework is light, and the workmanship might be better.

A set of cooperage machines were exhibited by J. Thompson, of New York, adapted for one-sized barrel only, of good design, but badly constructed.

A novel saw-sharpening machine was exhibited by Perin, for sharpening hand-saws, by means of an ordinary triangular file, worked automatically by power. The machine was supplied with an apparatus for setting the teeth of the saw; the whole was entirely self-acting, but the working parts appeared as though they might be rendered less complex with advantage.

Hamellet shows some patented mortising bits on the helicoidal principle, being an improvement upon the older kind of bits, as the work done, especially in soft wood, is much smoother.

I cannot close this report without tendering my sincere thanks to the Society of Arts, and to all connected with that Society at the Paris Exhibition, for their kind attention and services; and I feel assured that this visit has proved a benefit to all who have undertaken it under the Society's auspices.

THE RIBBON TRADE.

By L. S. BOOTH,

COVENTRY.

IN traversing the galleries devoted to silk producers in the Paris Exhibition, a feeling of surprise is excited that, in an article like this, entirely for ornament, it should occupy so prominent a position.

The ribbons, as a whole, are artistic in design, harmonious in colour, and perfect in workmanship. No painter ever put colour on canvas and made those colours appear like real fruit or flowers, with bloom and every variety of tint, with more success than have the varied artisans engaged in this trade done. The productions are perfect specimens of their kind, in which the artist has brought all his varied power to imitate nature in form, the chemist in hue and colour, and the artisan judgment and skill, to work the whole and make a success. Nor should it be forgotten that, in producing these patterns, there has been an enormous outlay by the manufacturer for design, draft, and cards.

To look at these articles in detail we must begin with those produced in France, the first by way of order and also excellence. St. Etienne, the centre of the French ribbon trade, exhibits goods made specially for the occasion, so beautiful and neat as even to surprise themselves. They have every variety of rich brocade, sarcenet, printed lustring, Oriental, galloon, satin and pad, in all widths and colours. To particularise a few :—

Messrs. Larcher and Faure, among many excellent articles, exhibit brocades with twelve or more colours. The body is close, yet it retains the silky gloss, and is even and level throughout.

Messrs. Epitalon, Brothers, exhibit, perhaps, the finest selection of satins ever presented to the public gaze; extremely rich, level, made of fine silk, in brilliant colours, and entirely free from rawness or cockling.

Mons. E. Lacroix's show of black Orientals is glossy, rich, and woven with the greatest care.

Messrs. Guitten, Nicolas, and Co.'s show of watered blacks is very choice. There is the long, rich wale, and a depth of dye and finish throughout.

Messrs. G. Dessales and Co.'s elaborate brocades cannot be forgotten; some of them requiring ten to twelve shuttles, 12,000 cards, and a harness of 2,000 cords for their production.

To whichever class of goods we turn, narrows or broads, plain or fancy, printed or embossed, there is evidently great care on the part of those engaged—the concentration of skill and care in every branch.

St. Etienne has not only retained her ancient *prestige*, but has raised her colours higher, so that it will be extremely difficult for any competitor to tear them from her. They have striven for excellence and have attained that position in the eyes of many, but not their own. There may be doubt as to the justness of the awards in some cases; there can be none concerning the French ribbons. The twelve silver and the eighteen bronze medals that have been given are their due in the eyes of an unbiassed public; treble the honour awarded to all their competitors in the ribbon department.

The next in order is Prussia. These are a class of goods much below the former.

Messrs. J. Mertens and Co. exhibit mixed and unmixed ribbons. The mixed are evidently for the million, and made with such care as to appear silk. An article of this kind, neatly made, at a time when silk is scarce and dear, is sure to find a ready sale. Some of the mixed goods do not cover as they might, considering the amount of warp used.

Messrs. Schumacher and Schmidt's black silk ribbons are evidently a better class.

Messrs. Fischer, Brothers and Co.'s articles are for the million, and might be better, even with the material employed.

Prussia has but a humble show of ribbons, and takes one silver and two bronze medals.

Austria, on this occasion, has shown a variety of useful goods that has excited great surprise in many minds. They are common ribbons, in bright colours and chaste designs; mixtures of cotton and chap. In some the mixture is far from judicious, in others great care and taste have been displayed.

Messrs. Adensamer and Co. exhibit a variety of common goods, such as are seen in every-day life.

Messrs. Hetzer and Son exhibit plain, figured, and watered galloons, and figured pails in great variety.

Messrs. Moering and Son exhibit brocades of elegant design, Orientals, pails and watered goods; a very choice and useful assortment.

Several other manufacturers exhibit very similar goods. In this department there is a variety equal to the French department, but a marked difference in every article as to quality, detail, and workmanship. Most of the worst is supple, the count of warp low, and the brocade less elaborate. But withal they are a class of goods much in use by the bulk of the people. They prove that the manufacturer and weaver are acquainted with the trade, to produce articles so diverse and varied. The awards to Austria are two silver and two bronze medals.

Switzerland's display, on this occasion, appears below her character. They have the reputation of making a good common article, but some of the articles are thin and common in the extreme; others are very good and of superior design and execution. The Exhibition shows a capacity for a very general trade; elaborate brocades, Orientals, embossed

ribbons, galloons, &c. In looking at the Swiss ribbons, and knowing something of her capacity, one thinks she has not done herself justice, particularly in plains and satins. One silver medal has been awarded to Switzerland.

Great Britain has a humble show of plain and slightly fancy goods; these are very good in colour and workmanship. The Messrs. Franklin and Son, and Carter and Phillips, show very neat and rich goods, taken from ordinary stock. Mr. Hart's goods, of second quality, are likewise very neat and good. Only three firms exhibit; two take the silver and one the bronze medal.

Having thus examined the ribbons, our next care was minutely to go through the machinery department, and see to what extent the foreigner differed from us in the powers of production. We traced this gallery through, but found no ribbon looms, except one in the French department, in an incomplete state, and in every respect below their average looms. We saw in the British worsted and woollen looms many excellent contrivances that might be adapted with advantage to the Coventry loom. For instance, the small iron machine, of about 24 hooks, strongly made, would be very useful to work the shafts making satin, long grogram, or other like natures of work. These are made by J. Leeming and Son, and by Snowden and Stephenson. The first of these firms has a contrivance for raising a second opening in the Jacquard loom, which is very good. The heads of the hook are furnished with a double hook, one in front and one behind. There is also a second grating for raising the hooks; this grating, by the adaptation of a shorter lever, rises higher than the other. Where the cards are perforated, the hooks fall upon the ordinary grating, and rise for the ground shuttle to pass through, but where there are small pieces of leather attached to the cards, they are thrown upon the back grating, raised higher, and the brocade is made. The loom has one ground shuttle, thrown in the ordinary manner, and eight brocade shuttles working on pegs; ground and brocade are thrown simultaneously, and there is no loss of labour. The front of this batten works upon a swivel, and is moved to the right or left by the action of the machine; thus, when one small flower is made in eight places, a portion of plain is made, the batten is then moved on to the right or left, and another row of figures is woven. By this contrivance, there are 16 spots or figures made by the eight shuttles, without loss of colour.

Howard and Bullough, of Accrington, show a self-acting beaming or warping machine, constructed on a similar principle to the doubling machine, so that if one thread breaks, the frame stops instantly for the warper to rectify; this property renders it impossible for a careless warper to produce bad work.

In the Swiss department is a machine for clearing and warping silk, made by C. Honegger. As many bobbins are placed upon the jack as are required for the division of the warp; then the ends are drawn through a brass sley, every alternate dent of which is closed in the middle, the threads in every instance being placed in the upper part of the closed dents. This is done for the purpose of making the cross; by drawing the sley up and then pulling it down the cross is completed.

This sley is about 14 or 16 inches long. A short distance from this is another sley, in which the threads are contracted into an inch space. The warper clears the silk between the jack, a distance of six feet, and the broad sley. The frame, placed in a horizontal position, revolves by power, and the warp is made. The part of the machine holding the sley moves gradually forward, thus the warp is spread equally upon the frame. Attached is a metre, with index, for measuring the length of the warp; also an alarum, to indicate the distance. The same firm show a very peculiar sizing or sorting machine. The silk is wound upon bobbins and placed upon the machine. Upon the spindle are six bobbins with only one guider. The thread is brought through a delicate sizer, and according to the size is the thread carried to the distinctive bobbin. The fine and coarse of all the gradations of size are thus wound and upon separate bobbins. The bobbins are then taken off the spindle, the ends cut, and the different sizes put into the several baskets for rewinding. This is a very useful machine for uneven silk.

Having seen all in the Exhibition bearing upon the ribbon trade, we, accompanied by an interpreter, started for St. Etienne on Tuesday, Sept. 17, at 9.50 p.m., and arrived in that town the following afternoon, at 5.40. Mr. Haussoullier, of the British Commission, whose kindness we can never forget, had supplied us with introductions to the most eminent manufacturers in that place; and early the next morning we commenced our work, and waited upon Messrs. Larcher and Faure for permission to visit their mills. These gentlemen received us in the most courteous manner, and, though one of them had been refused admittance into the factories of Coventry as a manufacturer, they gave us every facility to visit the workpeople and see all branches of the trade. In our visits we were accompanied by a warehouseman, who, in the most unreserved manner, showed us all we required. In many cases we saw six and eight tiers of shuttles used in making neckties not more than three-fourths of an inch wide. Some of the goods had to undergo a little manipulation after being woven. The spots of velvet are made by flushing the silk in weaving, and then cutting it with a sharp instrument after it comes out of the loom. This part is performed by women and girls. There was one appliance in general use on all the looms in France, and of great use to perfect the making of rich goods. A number of cotton threads are placed upon slabs of wood, and placed upon the back of the batten, close to the bed of the batten, the sley in most cases being about two inches from the harness when the batten is back. Buttons frequently occur in the threads, and make a fault, or cause the shuttle to cut them as it traverses the opening. These threads are placed between every two threads of silk, and obviate this fault. They are put in before slewing the warp. Of the sixty looms we saw in St. Etienne, not one was without the threads. We found the looms little more than half the size of the ordinary Coventry loom; built with great regard to solidity, so strong that, when going, little if any vibration could be perceived. Messrs. Gerentet and Coignet also afforded us considerable aid in our investigations; likewise Messrs. Dessales and Co. They each deputed gentlemen to show the trade, and we are certain no reserve was observed. The loom-makers were equally kind, and gave us every facility in our

inquiry. We felt grateful and pleased, the more so because several of these gentlemen had granted to us what was denied to them in our native town.

But to return to the looms. They were capable of making the most elaborate fabrics, having from three to eight tiers of shuttles, with machines from 900 to 1,600. In some cases there were two 900's mounted together. We saw one with a 900 and a 1,200 mounted together. Every loom had the warps divided into eight or ten divisions; by this means, with the hanging weight, they were able to adjust their weights to a nicety. The silk was fine Italian, and in every case the warps were cleared in warping by the ordinary method. The looms were polled by the weavers, and were, with few exceptions, the property of the weavers.

We were informed that within a radius of fifteen miles around St. Etienne there were about 20,000 looms, 19,000 of which were the property of the workmen; 10,000 undertakers, and 1,000 journeymen, and several hundred manufacturers. The workmen live in parts of houses, or rooms, for which they pay a very high rent. For space for two looms and two small rooms, several stories high, 200 francs per year. One weaver, having four looms, and rooms for two more, with rooms beside, paid 600 francs. Meat is cheaper than in Coventry, but very inferior. The ox and cow are used very generally for ploughing, drawing stone, iron, and very heavy loads, and are kept until strength fails them before they are killed; the meat when killed is dry and hard. Bread is about the same price; if any difference, a little higher, but not so good as in England. Grapes and fruit cheap; vegetables moderately cheap. Clothing very dear. The silk used in St. Etienne is very good, and the shoot the best tram, and very clear. In the 30 mills or shops we visited we only saw two plain looms; these were very inferior, but the figure-looms are superior in construction and finish to anything in England; so made as to make every variety of fabric. One loom of six places had 11 tiers of shuttles, 10 of which were at work; two 900 machines and 18,000 cards to make the pattern. The hand could only make half a yard per day. There were very few ribbons being made, but a large quantity of sashes, belts, neckties, cravats, and velvets. The plain velvets are made with two openings, and two shuttles thrown together by the peg batten. Though they have two openings they only have two shafts for the ground, each shaft having a double row of eyes, three inches apart; the eyes are glass, and the spaces between the eyes are glass, and cast at the same time. The pile is on two shafts, worked with very little weight, and crosses every fourth shoot. The cutter is upon the breast rib, attached to a straight plate of iron, so that when it is moved horizontally it has a slight movement to the front and back of the loom, and thus it cuts it more clear.

There was a difficulty to ascertain the amount of wages paid to the weavers. The journeymen varied from two to five francs per day. Those who worked upon their own looms, found wages to fluctuate according to trade, pattern, and silk. Many of them, from the price they pay for looms, must earn considerable wages. One man, working a very elaborate pattern, said he earned 10 francs per day.

The weavers are a very intelligent class of men, and can mostly read and write. Every facility has been afforded by the town to attain proficiency in their art. In the museum—built at considerable cost, containing sculpture, paintings, antiquities, minerals, birds, a valuable library, and all kinds of handicraft—are two rooms devoted to the staple manufactures of the town. The one devoted to the ribbon trade has a model of a single-batten Jacquard loom, a six-tier batten, parts of looms that have grown out of use, diagrams of the various processes through which the silk passes in the process of manufacture, a vast variety of woven portraits, samples of all kinds of ribbon woven in the neighbourhood, with the drafts by which they were made. The other room is devoted to the samples of gun manufacture. Every variety of these weapons is exhibited; small and large, simple and complex. This museum is open free two days per week, and is intended to educate the people in the local trades.

There subsists a very friendly feeling between the manufacturers and workpeople; this has been attributed to the action of a society called "*Conseil des Prud'hommes*," or Society of Prudent Men, formed of various trades, of workpeople and masters, to adjust the differences that from time to time arise. A gentleman, occupying a responsible position in St. Etienne, assured us it was the best institution in France, and had the confidence of all parties. It does not interfere with the price of labour, or the making of contracts, but it enforces integrity in the fulfilment of contracts. It is a council of conciliation legally established, and all its decisions, of not more than 200 frs., are binding upon both parties; and though it often deals in matters involving a greater sum than this, appeals against those decisions are very scarce. It originated in the time of Napoleon I., in the year 1806.

From St. Etienne we visited Basle, for the purpose of seeing how the more common goods were made. This town presents a far more inviting appearance than the former. The streets are cleaner, the houses are cleaner, and the people have a more healthful and cheerful appearance. They are better dressed, a more comfortable class altogether. We went over a steam-power mill, having about 60 Jacquard looms: none of them had less than three tiers of shuttles. The looms here also were very small, and engaged in making all kinds of fancy articles. Pads were being made, taking about six shuttles. Common ribbons, with the ground shot cotton, and a very thin warp. The frames were of iron, and stood very firm. The warp was Italian, and very fine and good. The shoot, in most cases, was twist, or chap and cotton. The brocade China tram. All the looms were worked with an iron rod under the silk, at the back of the sley, to which was attached a leather to the back of the compass-frame, that when the batten came to, the rod being within a flat plate of iron on the back of the bed of the batten, the rod rose, and thus all the threads were brought to a level when the opening closed. I had seen the same contrivance in Coventry, but it is not general there. By this means they make a plain ribbon comparatively level in the figure-loom.

The weavers work from 6 in the morning until 8 in the evening, with only one hour for dinner; they take breakfast, and refreshment in the

afternoon, at their looms. Their wages are from 18s. to 20s. per week in our money. They work per piece. They have few broken weeks; the looms being small, and the pattern being regulated with cards and shuttles, there is very little alteration. The machines vary from 900 to 1,200. The filling is done here as at St. Etienne, on small filling machines of six spindles. The warping and clearing of silk the same as in France; a very imperfect method of clearing. Most of the manufacturers keep their own designers, draughtsmen, and stampers. Many make their own looms. The cheap, plain ribbons are made by weavers in the mountains: this branch is very slack. In addition to the warper clearing the silk in warping, both warp and shoot is cleared before dyed. It is put upon parters, and carefully passed round, and all nubs taken off by pickers or scissors.

The result of our inquiries in Paris concerning the ribbon trade in that city are as follows, copied from an official document:—In 1849 there were 10 manufacturers; in 1860 only 6; in the former year 2 manufacturers employed more than 10 hands, 3 from 2 to 10, 1 worked by himself, 3 made exclusively for decorations, and 1 had another trade in addition to the ribbon trade. The produce of the year 1849 was £13,000 worth of goods. The total number of workpeople employed was 46—38 men and 8 women; 28 worked per day, 8 per piece; 7 earned 2*l.* 7*s.* 6*d.* per day, 17 3*s.*, 5 *l.* 5*s.* 6*d.*, 6 *l.* 5*s.* 6*d.*, 2 5*s.*, and 1 6*s.* Women all day-work; hours from 6 to 6 in summer, 7 to 7 in winter; two hours allowed for meals; 2 received 1*l.* 5*s.* 6*d.*, 6 2*s.* They all could read and write; conduct good. For the last few years the trade has been sinking in Paris; add 10 or 12 per cent. to this and we have the wage at the present time.

The result of our inquiries is as follows:—For making good plain ribbons England has nothing to fear from the construction of the looms or the ability of the workmen. Our class of loom surpasses anything we have seen on the Continent for making a simple, plain, or very moderate fancy ribbon. The weavers in England have difficulties unknown elsewhere, rough and inferior warp, fine and irregular shoot. The system of clearing the warps, occupying a long time, would not answer with the coarser qualities of silk frequently used in this country. But for making figures and brocades, our machinery is sadly too restricted. Many of our figure-looms have only one shuttle, and brocades are made with one to four drawing pins, at great trouble to the weaver, and little satisfaction to the manufacturer. Some fancy ribbons are made with lay, large quantities of satin, or program; in either case there is great labour on the part of the weaver to put them in, to say nothing of the loss of time and expense; and when made they are expensive, and do not command the sale proportionate to cost and trouble. Then, again, those of our looms that have more than one shuttle are very limited in their capacity. Many patterns require five or six tiers for fancy articles that we might make with profit. A hundred Jacquard looms, of moderate size, with five or six tiers of shuttles, brought into Coventry, would be one of the greatest boons that could happen to the city. There is more than ability to manage them. There are artistic skill, excellent dyers, steam-power, gas, and every facility at our doors to do a good trade in

this direction. How these are to be purchased is a consideration. There are men in the town that can make them, and in some cases give facility to the people to pay for them by instalments, but the long suffering has taken all heart out of the people. The ribbon the people of Coventry have long made, and can make well, is not now required; other fabrics have sprung up, and it behoves the town to look into the matter, and adapt itself to the requirements of the age.

We returned to England on September 28th, after an absence of three weeks, much gratified, though fatigued by our visit. Thanking the Society of Arts for the generous manner in which they provided for the workmen by money and introductions, I hope this visit will not be lost.

RIBBON WEAVING.

By JOSEPH GUTTERIDGE,

COVENTRY.

I HAVE the honour to present to you this report of my visit to the Paris Exposition, and the investigations I have made relative to the trade I represent (ribbon weaving), and I cordially thank the Society of Arts for the valuable aid it has afforded me, both as to means and facilities in obtaining information.

I left London by the 4.30 (Charing-cross), Sept. 8, and arrived in Dover by seven at night, started by the packet at nine, and reached Calais about twenty minutes past eleven, arriving in Paris about nine on Sunday morning. On Monday went to the Exposition, and took a weekly ticket, and had an interview with Monsieur Hausseoullier, the Agent for the Society in Paris, who courteously gave me all the information I required relative to the places and names of continental manufacturers engaged in the silk trade. I carefully examined the various sections devoted to the Exhibition of wrought and unwrought silks, and paid particular attention to the manufactured products of St. Etienne, Switzerland, Prussia, Austria, and Germany. In intervals I visited the machinery department for the production of textile fabrics in silk, woollen, and cotton, and in particular those appliances used in the preparation of the raw material, and on which depends so much the marketable value of the finished fabric of manufactured ribbons, more particularly those of Messrs. Carter and Phillips, Franklin and Co., Mr. Hart, and others, from Coventry. I was much struck with the fact that while their goods were such as were made for ordinary sale, those of the French section were goods made expressly for the Exposition, and of a special character, of extreme manipulative skill, and demanding machinery of more intricate complication than is used in ordinary fabrics. In looking again over these sections, we came to the conclusion that such fabrics could only be produced by a more perfect system of treating the raw material, better machinery, and a more uniform quality of the material employed. Being myself engaged (as artisan) in that class of the silk manufacture which we call brocades or figured ribbons, or silks made by several tiers of shuttles, I thought it necessary I should see the machinery that could produce such intricate fabrics; consequently, myself and fellow-worker resolved to visit St. Etienne and Basle, and the visit to these places fully repayed us for the expense of transit. We

found at each place machinery of the most intricate complication used in the manufacture of ribbons, silks, and velvets, such, indeed, as we in Coventry could have no conception of. I am glad to record it, that every opportunity was afforded us by the manufacturers of St. Etienne and Basle in our investigations. One thing much impressed me, that while our mode was devoid of system, theirs was complete, and consequently there was greater perfection when the separate parts were combined in the manufactured article, although we found that their best qualities of raw silks and cottons were purchased from England. I felt convinced from what I saw, that with improved machinery, and a better system of treatment of the raw material, we should be able to compete successfully with continental manufacturers. In carefully going back through these investigations, I have come to the conclusion, that the mental and physical capacities, on the whole, are in favour of the Coventry artisan, who generally as a class can read and write well, and in ordinary trade dress well, taking pride in their extra room, generally well stored with useful books. I feel more impressed with this fact, because within my recollection was the first Jacquard machine introduced into Coventry, and the progress since made proves their capacity, with the aid of capital, to compete fairly with the continental manufacturer. Abroad we find machinery adapted to the clearing, sizing, and preparing the silk for the use of the weaver, so that he has nothing to do but pay attention to the weaving of it down; and I feel assured, that until this system is introduced into Coventry, we shall labour under a disadvantage in competing with our continental neighbours. Thus goods of extreme value, to produce a profit both to the manufacturer and artisan, should be speedily and well prepared from the raw material employed, so that the finished fabric may be without fault, and be presented to order within time. All the applications of machinery I have seen on the Continent have this tendency, not only in the processes consequent to the woven fabric, but also in the construction of the loom machinery itself.

In the extensive workshops of Messrs. Wehl and Aemmer, of Basle, this division of mechanical labour gives them serious advantages over us, each distinct part having a separate tool for its production, all mathematically gauged and arranged to produce a certain result, and the consequence is, any number of looms made are counterparts of each other, adapted to the particular results they wish to obtain. Among the Lancashire and Yorkshire machinists I find this principle carried out in the strictest manner, and the consequence is perfect self-acting machinery, facility of production of the woven fabric, and minimum loss of time, both to manufacturer and artisans employed. And, in conclusion, I consider we require more theoretical education, through the medium of museums, schools of art, and classes, devoted to the general interests of our staple trade, so that all might have an opportunity of acquiring the knowledge of design, colour, and taste, so essential in the manufacture of silken fabrics.

To the manufacturers of St. Etienne and Basle we give our best thanks for their kindness, by personal attendance and other means at their command, that enabled us to have such ready access to their workshops; and also to the machinists and manufacturers of Basle we

accord our full appreciation of the unreserved attention they paid to us, they knowing at the time we should take back with us the knowledge their improved machinery and more systematic mode of manipulation would give us in competing with them in the future more successfully. I mention this more particularly, as the manufacturers of St. Etienne and Basle represented to us that in their visits to Coventry they were refused admittance to the mills of some of the Coventry manufacturers, and we regret this much, as in contrast to the kindness we received from them.

To Mons. Haussoullier we give our most grateful thanks for the kindness and sympathy he has shown towards us, independent of the position he holds in the British Commission, and which enabled him to afford us such material help in our investigations.

I thank the Society of Arts most earnestly for the aid it has given us in better understanding the nature and characteristics of the trade I am engaged in.

L A C E.

By EDWARD SMITH, JOSEPH BIRD, AND GEORGE DEXTER.

WE, the delegates recommended by the Nottingham Chamber of Commerce, and approved by the Society of Arts, beg leave to present the following report upon the lace department in the Paris Exposition.

Judgment having been pronounced upon individual cases by the jurors' awards, it would be presumptuous in us to attempt to too minutely criticise, where the seal of approbation has already been placed, by gentlemen so much more qualified than we are; we therefore give, as the result of our observations, the general impressions produced upon our minds after careful inspection of the articles exhibited by different nations.

Believing in its importance, we have endeavoured, to the best of our ability, to ascertain the quality of work turned out by different nations; influences affecting the character of the work, and trade generally, such as cost of materials, wages, conditions and divisions of labour, education, habits of life, amusements, and trade associations.

The first class of goods we inspected was the French department, Group 4, Class XXXIII.

The hand-made laces are of surpassing beauty; the intricacy of and perfect following out of the leaves and flowers of various plants introduced into the designs are very delicate and truthful. We are of opinion that the carrying out of the design in the hand-made lace must have an abiding and elevating power upon the minds of the females engaged in this branch of industry, implanting a taste for the beautiful that no doubt descends to their children, widening and spreading in its character, and influencing all who may come in contact with them.

The total number of lace-makers is estimated at 200,000 women and girls; they gain on an average 1fr. 25c. per day; some, who are particularly skilful and industrious, earn as much as 3fr. 50c. for 10 hours' hard work. Lace makers are, for the most part, peasant women, who all, without exception, work at their own homes, often quitting their lace pillows and babes to attend to household duties, or to work in the fields; lace-making has the advantage of being carried on at home, and, therefore, of not depriving agriculture of too many able hands. French lace is sold in all markets, in the United States, the Brazils, Russia, Germany, Italy, Great Britain, the East, and the Indies.

Paris is the principal centre of consumption, the young females wearing a very tasteful description of head-dress, composed of all kinds of lace.

The machine-made laces are of a very high character, both as regards quality of material and design: it is impossible to carry out the design to perfection, unless a sufficient number of motions of the machine is gone through, so as to give an opportunity for the figuring threads to lay in the work, in that smooth and rounded form, successfully tracing the design upon the lace as upon paper; this is pre-eminently the feature of the French machine-made laces; all the articles, from the broadest to the narrowest widths, exhibit the same beauty of construction. The laces exhibited consist principally of blondes, black laces, edgings, grigrures, and Cluny's. The blondes have a bright, silvery appearance; the black laces, in the form of shawls, flounces, &c., display great beauty in design, and brightness in the fine and thick-thread silks, not only in the goods exhibited, but those we saw in the course of manufacture at Calais, and St. Pierre, near Calais.

A first-class article would appear to be the ruling feature in the minds of the manufacturers, the design in no way being sacrificed for the sake of cheapness.

WAGES, CONDITIONS, AND DIVISIONS OF LABOUR.

There are in Calais, and St. Pierre, near Calais, 780 machines, the best of which were built in Nottingham and its vicinity. They are all in factories, worked by steam-power, running all hours, commencing work from 6 to 7 o'clock on Monday morning, continuing until 10 o'clock on the Saturday evening; in some establishments working up to 10 and 12 o'clock on Sunday morning.

A great deal of liberty is allowed the workmen for social intercourse, and a large amount of affability and familiarity exists between employers and employed in the various workshops.

There are two men at each machine, taking alternate "shifts" or turns in working: one commencing on Monday, from 6 to 7 a.m., continuing until 9 a.m., the other coming on at 9 a.m., and working until 1 p.m., the first coming back at 1 p.m., remaining until 6 p.m.; the one leaving off at 1 p.m., returns at 6 p.m., and works until 2 a.m., and so on through the week.

The law in France is that a week's notice shall be given and taken by the employer and employed, the man, if these conditions have been fairly complied with, receiving what is termed his *livret*, in which is described his personal appearance, answering the purpose of a passport to any part of France.

If the employer refuses to give up the *livret*, he is liable to a fine of 50 frs., or if there should be no *livret* in existence betwixt them, they are both liable to a fine of 50 frs. each. If the workman leaves in debt, it is inserted in his *livret*, and his next employer, according to law, can stop one-fourth of his earnings for the purpose of refunding the debt to his former master.

In the lace-trade terms are used to denote the widths of machines, such as "Quarters;" any number of inches a machine is in width, upon being divided by 9 inches (a quarter of a yard), gives the number of

quarters. "Gauges" are counted by the number of points or combs contained in an inch; for instance, a 10-point would be 20 points to the inch. All gauges are calculated from the 10-point standard.

The workmen are paid by the "Rack," consisting of 1,920 motions of the machine.

The following prices were obtained from nine different firms in Calais and St. Pierre:—

124 inch	10-point	Cotton Cluny	. . .	14 sous per rack
126 "	10 "	"	. . .	14 " "
130 "	10 "	Silk Bands	. . .	18 " "
160 "	10 "	"	. . .	20 " "
180 "	9 "	Silk Cluny	. . .	21 " "
160 "	10 "	"	. . .	24 " "
140 "	10 "	Silk Laces	. . .	21½ " "
156 "	10 "	Silk Bands, back gimps	. . .	28 " "
156 "	8 "	"	. . .	23 " "
150 "	8 "	Silk Edgings	. . .	20 " "
112 "	7 "	"	. . .	14 " "
120 "	9 "	Silk Bands	. . .	22 " "
110 "	8 "	"	. . .	22 " "
114 "	8 "	Black Silk Laces, back gimps	. . .	24 " "
156 "	8 "	Silk Bands	. . .	22 " "
148 "	10 "	"	. . .	23½ " "
126 "	8 "	Narrow Banda	. . .	18 " "
130 "	10 "	Silk Bands	. . .	21 " "
132 "	8 "	Colours	. . .	24 " "

The edgings, bands, or breadths, vary from half an inch up to three inches, a few as high as six inches. The number of bars worked is much smaller in quantity generally than in England, although the new machines we saw have been built to work a much larger number than they do at present.

We found there were other machines worked in various parts of Calais and St. Pierre, from 3 to 6 sous per rack less than those just named. Alterations are paid from 12fr. to 25fr. per week; warpers receive from 25fr. to 30fr. per week; card punchers, 30fr. per week; boy readers for punchers, 12fr. per week; brass-hobbin winders, by forty or sixty at once, from 18fr. to 25fr. per week; boy back-winders from 8fr. to 12fr. per week; one-at-once winders from 14fr. to 18fr. per week; lace-menders, 10fr. to 15fr. per week; clippers and scollopers, 12fr. to 14fr. per week; carders, 14fr. to 22fr. per week; jennys from 12fr. to 18fr. per week; lace dressers, 18fr. to 25fr. per week; silk and cotton dressing from 8 sous to 10 sous per metre; cotton blacking, 16 sous the kilogramme; dyeing from 3fr. to 5fr. the kilogramme.

Standings for machines driven by steam power, generally 600fr. per year; coal from 21½fr. to 24½fr. the French ton; gas, 1 sou per hour, if no meter is used, 7fr. per month for one light for a stated number of hours; if used by measure, 8 sous per metre.

The prices for different qualities of silk are about the same in France as in England.

EDUCATION.

As a means of artistic education, the perfect freedom of access to the picture galleries appears to be taken great advantage of, and fully appreciated by the people: as upon our visit to the Louvre, in one gallery alone, we witnessed fifteen persons, old and young, of both sexes, copying the paintings of the great masters. The beautiful gardens are another source of attraction and instruction to the people. The intimate and social freedom we noticed existing between the employer and employed, is another great source of improvement to the workpeople. The closer and more constantly the minds of a people can be brought into contact with a higher standard than their own particular class furnishes, must prove a powerful means in their elevation, in all matters of taste, and a great lever in a nation's progress.

We earnestly desire to call your attention to the following facts and figures, taken from the official catalogue of the present Exhibition, showing the great activity and interest the government and private individuals are manifesting in the intellectual development of the nation:—For the first time, at the International Exhibition of London, in 1862, a particular class was created to receive the school requisites, works, and materials, but this was limited to infant schools and special schools for drawing. The French Exhibition of 1867, however, embracing, on a much more comprehensive scale, all kinds of education—that of adults as well as of children, their professional as well as technical education; and, acting up to its universal character, presents for examination the various evidences of the intellectual progress of the country. Therefore, whereas the Exhibition of London only numbered 180 exhibitors in this class, that of Paris possesses as many as 500 exhibitors, which, however, is less than half the number who applied to the Imperial Commission for admission. The hygienic condition of school buildings, the judicious disposition of the interior, the arrangement and installation of the whole, are subjects of vital importance in educational matters. These requirements are now better understood, and more ably carried into effect. The new schools are better distributed, besides affording the scholars a more ample supply of air, light, and space. A large number of old buildings have been greatly improved in this respect, and arranged in accordance with this principle. The impetus has been given, and this transformation will gradually be extended to the smallest and most insignificant villages.

The institution of *crèches* (or infant asylums), which has been tried for some time, is now regularly organised, and is showing a progressive development. It is the same with the *Salles d'Asile* (infant schools). France numbers 3,572 public infant schools; 264 were founded between 1863 and 1865; and during the same period the inmates of these schools were augmented by 34,912 children. In the rapidly-increasing training schools for the education of teachers, school mistresses are taught the use of those gymnastic exercises and games which make these dwelling-places of youth more gay and wholesome to the little inmates.

The progress in the management of the elementary schools is still more marked in every way. From 1863 to 1865, the number of com-

munies possessing no schools was reduced from 818 to 694; 938 new schools have been founded, and the scholars, which now number 4,436,470, have been augmented by 100,102 children. The commercial or free schools for girls and boys amounted in 1865 to 69,499.

The instruction has not remained stationary, having considerably extended, inasmuch as different branches of study which were previously optional, have now become obligatory; it is also much improved by a more intelligent direction; agriculture and horticulture are being taught with eminently satisfactory results; in a word, the general improving tendency is to make primary instruction a broad solid basis, on which may rest the education of adults—special, secondary, and technical—in accordance with the mental capability and requirements and future career of the student.

The position of the instructors is much improved; they are better remunerated for their services; their interests are protected; elevated in the eyes of the population by public recognition of their services, and allowed to participate in honorary distinctions. They are thus more than ever encouraged to devote themselves to the diffusion of public instruction, which is the special requirement of the times and the sincere wish of the French population.

The improvements in the methods and plans of instruction are manifest ever since the English Exhibition of 1862.

The elementary books and treatises for the teaching of reading, writing, grammar, arithmetic, history, geography, and drawing, have gained much in simplicity and clearness; they are more practical; they are more impressed with the end they have in view, while they spare the child both time and trouble.

Several societies have organized in various places, especially on the behalf of town workmen, means for scientific instruction.

The Polytechnic Association, which dates from 1830, numbers now twenty-two different sections in Paris and its environs, while it has founded and endowed a much larger number in various departments, showing that individual enterprise has been in nowise idle.

However, it was only an energetic will appealing from high quarters, such as that of the Minister of Public Instruction, to the general intelligence of the country, that could, in the brief period of two years, determine this and inaugurate such a vast educational movement, which, from the 1st January, 1864, to the 15th of December, 1866, augmented the number of adult educational institutions from 5,623 to 28,546, and thereby created a spontaneous accession of 600,000 voluntary pupils.

The diffusion of education cannot be carried out without the diffusion of books: they are the auxiliaries of education, and are, moreover, themselves teachers. The establishment of libraries in all the communes of France, lending or hiring out books, placing them within the reach of all, was the necessary object of the propagation of education.

Set on foot by the Minister of Instruction, established in the commercial schools, kept by the schoolmaster, the scholars' libraries were the first established.

There are at present 8,000 libraries, which lend 500,000 books per annum.

Incomplete as this enumeration is, some idea can be formed from it of the vast system of public instruction in France.

HABITS OF LIFE.

The habits of the French people is a subject we cannot report upon in so satisfactory a manner as we could have wished; the shortness of our stay in France prevents us from speaking only upon slight personal experience: but, from inquiries there, and from persons who have lived amongst them, we learn they are a very sober and economical people, displaying great ingenuity in adapting themselves to the circumstances by which they may be surrounded, their great aim appearing to be to live within their means. A great many natural products, such as vegetables and fruits, form the principal food of a vast number of the population. France is the most favoured country for the growth of the delicious and nutritious mushroom, which forms another great article of food. The labouring and industrial classes are not wanting in ability to turn the slightest resources to the best account.

AMUSEMENTS.

The amusements of the French people generally are of a rational kind, whilst pleasing to the eye, calculated to improve the mind; music and dancing, also promenading the beautiful gardens, being great sources of enjoyment to the people.

We are sorry that the lace-makers of St Pierre les Calais are debarred, by the excessive and untimely hours they work, from partaking of those exhilarating and healthy pleasures so freely partaken of and enjoyed by the other portion of the population.

TRADE ASSOCIATIONS.

On our arrival in Calais, a little commotion was caused by our countrymen resident there assembling to receive us; an exaggerated account of which, and a misapprehension of our mission, reached the Commissary of Police, who threatened to seize upon the secretary and treasurer should they again attempt to assemble, or collect money for the purpose of carrying on a society which had been some months in existence amongst the lace-makers. The secretary and treasurer at once waited upon the maire to present a copy of the laws and explain the constitution of the society, composed as it was of French and English. The maire stated there was nothing objectionable in the laws, and granted permission for them to continue, intimating they must not assemble in greater numbers than 20, at present: but, in all probability, they would be allowed greater liberty in that and every other respect in or about November.

The laws of the French Lace-Makers' Society are the same that are in existence amongst the lace-makers of Nottingham.

BELGIUM.

The various laces exhibited by the Belgians are quite equal to the French in design, the point d'Alençon and Valenciennes being very beautiful specimens of that class of goods; the black silks have the same bright and superior quality that distinguishes the French.

PRUSSIA.

We saw nothing in this department calling for any particular notice or comment.

SWITZERLAND.

Principally embroidery, the figuring laid on plain net. We particularly admired one design, a suspended basket of flowers, for its beautiful and natural arrangement.

SPAIN.

We did not see anything requiring comment.

GREAT BRITAIN.

The hand-made laces, consisting chiefly of collars, cuffs, toilet covers, &c., very good in design.

Ireland sends some very neat and pretty specimens of tatting and point laces.

The majority of English machine-made laces exhibited are of a different character to those produced and shown by Calais and St. Pierre, the principal competitors of England. A similar class of goods to the black laces and blondes exhibited by Calais, were manufactured in Nottingham extensively up to 1857-8, Spanish laces replacing them in a great measure; two beautiful designs in this class of goods, in shawls, being shown in the present Exposition, also a few good imitation Pusher silk shawls. The Paris goods likewise exhibited, in imitation of the hand-made laces of France, were pretty generally made in a few of the principal establishments two and three years ago; there is more of novelty than taste in design in this class. The Cluny's, made at the present time, generally pretty good; in one instance displaying great taste in arrangement of medallions in the form of flounces, shawls, &c.

In the silk and cotton edgings, some degree of novelty is produced in pile nets, Valenciennes and linen combined.

The lace curtains, as a class, are of a very high character, there being some very chaste and beautiful in design; the majority are of excellent quality.

There are a few very fine samples of plain nets and quillings shown, one in particular, manufactured from No. 600 cotton.

The following is a list of prices paid per 'rack' for silk:—

Width.	Gauge.	Class of Goods.	£	d.
135 inch	10-point	Centre Gimps	1	2½ per rack.
145 "	9½ "	"	1	3½ "
137 "	10 "	Best Common Laces	1	1 "
136 "	10 "	Common Laces	1	0½ "
130 "	9 "	Spanish Shawls	1	4 "
128 "	9½ "	"	1	4 "
144 "	9 "	"	1	6 "
144 "	10 "	"	1	7 "
128 "	10 "	Spanish Laces	1	2 "
144 "	9½ "	"	1	4 "

Width.	Gauge.	Class of Goods.	s.	d.	
128 inch	10-point	Baguley's	1	0	per rack.
128 "	9 "	"	0	10	"
128 "	10 "	Maltese	0	11	"
144 "	8 "	"	0	11	"
128 "	10 "	Imitation Pusher	1	0	"
144 "	9 "	"	1	0	"
144 "	9 "	Cluny	1	0	"
180 "	10 "	"	1	4	"
COTTON GOODS.					
108 "	9 "	Cluny	1	6½	"
146 "	10 "	"	0	10	"
146 "	9 "	"	1	0	"
128 "	9 "	Baguley's	0	7	"
128 "	10 "	"	0	7½	"

The silk centre gimps, so termed from single weaving threads being worked in between the warp; the price for this class of goods per quarter (9-inch) 10-point gauge (20 points to the inch) is three farthings and one-eighth of a penny.

The best silk laces, made with back and front gimps, a light class of goods, three-farthings and one-sixteenth of a penny per quarter for 10 points; Spanish laces one-penny per quarter, 10-points, two-pence extra for changing cards to make complete shawls; this class of goods being very heavy, the weaving or gimp threads are worked one in the back and the other in front of the warp. The three last-named classes of goods, when worked with 70 top-bars, with any number of bottom-bars, are paid one-thirty-second part of a penny per quarter for every additional 10 bars over 70. Silk Cluny's and Baguley's three-farthings and one-sixteenth of a penny per quarter for 10-points, one-sixteenth of a penny per quarter for every additional 30 bars above 70. Cotton Baguley's one-halfpenny per quarter for 10-points. Cotton Cluny's one-halfpenny and one-sixteenth of a penny per quarter for 10-points; one-sixteenth of a penny per quarter for every additional 30 bars above 40; finer gauges count to the width of the machine; coarser gauges than 10-points are paid proportionally less per rack. The workmen are paid for alterations generally in the following manner—machines, working with a large number of bars, 3s. 4d. per day; working a small number of bars, 2s. 6d. Warpers, so termed from being employed to wind or warp upon beams the required number of threads the machine has to work, average about 22s. per week; card punchers range from 16s. to 25s. Boys—one-at-once-winders, 19s. to 12s.; threaders, 6s. to 7s. Females—wood bobbin-winders average 8s.; brass bobbin winders, 11s.; lace-menders average 8s. to 9s.; carders, 9s. to 11s.; jennys, 9s. to 10s.; clippers and scollipers, 6s. to 8s.; drawers, 6s. to 8s.; applicators, 10s. to 12s.; joiners, 9s. to 11s.; dressers, 8s. to 10s.

Silk dyeing, 8d. to 1s. per pound; cotton dyeing, 3d. to 5d., according to quality and colour required; silk lace dyeing, 7d. to 1½d.; cotton lace, 2½d. to 5d. Silk lace dressing 4d. per yard, 72 in. wide; 1d. per

yard extra for every additional 9 in. in width; cotton laces dressing 1d. per yard, 72 in. wide, one farthing extra per yard for every additional 9 in. width.

COST OF MATERIALS.

Silks, $\frac{3}{4}$ deniers (trade mark, F.C.Q.V. or G.B.D.F.A.), 41s. Italian singles.

$\frac{3}{4}$ deniers, best white creannes, singles,	49s. to 52s.
Cordonnet	33s.
Floss	32s.
20 by 25 Best spun	20s.
Ordinary quality	17s. or 18s.
3 drs. Tsatlee lace cords	36s. China
3 drs. Bengal	33s. Cal.
$1\frac{1}{2}$ to 2 drs.	36s. Cal.

Machine standings by steam power, from £10 to £13 each per year. Coals, per ton, from 6s. to 7s. Gas, if the consumption be under 50,000 cubic ft. per quarter year, 3s per 1,000 ft.; a reduction of one penny for every additional 50,000 ft. consumed.

There are 4,300 lace machines in England, 3,000 of which are in Nottingham and neighbourhood; about one-half of these are fancy Levers' machines, standing in factories worked by steam power, running from four o'clock in the morning until twelve o'clock at night, through the week, except Saturday, when the establishments close at six o'clock in the evening. There are two workmen at each machine, taking alternate "shifts," one commencing at 4 a.m. and working until 9 a.m., the other coming on at 9 a.m. and working until 1 p.m.; the man who left off at 9 a.m. returns at 1 p.m. and remains until 6 p.m.; the man who ceased work at 1 p.m. resumes work at 6 p.m. and continues until 12 at midnight.

The general custom between employer and employed is to give and take one week's notice.

The education, habits of life, amusements, and trade associations, of the working-classes of England, are subjects so well and generally understood, that we deem it quite unnecessary to enter upon those matters, further than to express our sincere hope, that the time is not far distant when some national system of compulsory education will be brought into existence, to lessen the ignorance amongst us, and place our country on an equality of intelligence with other nations.

In reviewing the notes taken upon the lace-goods exhibited, we are unanimous in opinion that French laces display a decided superiority in design and quality of material over the English goods. We believe the drier and clearer atmosphere of Paris, where the manufacturers of Calais send a large quantity of their silk to be dyed and stained, is one great cause of the brightness of the French lace. From information we gained, we find great care is bestowed in the dyeing and staining, to prevent, as far as possible, breaking the strands of the silk. In reference to the statement we obtained from Calais and St. Pierre of the prices paid per rack, they will be found, when compared, fully equal to the English

prices paid for similar classes of goods. The number of hours worked by the lace-makers of Calais and St. Pierre renders it impossible for them to be placed upon equally advantageous terms with the other portion of the population for mental, moral, and social improvement. The lace-makers of Nottingham are much better situated in that respect, and the Factory Act, providing for the regulation of the hours the children work, stipulating for their education, may be made the means of furthering the development of the lace manufacture in all its branches.

In concluding this report, we beg to express to the Society of Arts our sincere thanks for their courtesy and the obligation we are under for the opportunity accorded to us for visiting the Paris Exhibition; we also desire to tender, through your honourable Society, to Mons. Haussoullier, in particular, and the British Commissioners in general, our feelings of gratitude for their great kindness and attention, and the facilities afforded us in furtherance of our inquiries. The genuine interest, and personal kindness, rendered with the most perfect frankness, bespeaking true politeness, we shall ever remember with the liveliest emotions of esteem and satisfaction in connection with our visiting several French lace manufacturing establishments in Calais and St. Pierre.

HOSIERY.

By GEORGE KENDALL AND GEORGE CAUNT,

NOTTINGHAM.

WE, being artisans of the hosiery trade of Nottingham, having visited the Exposition of Paris, desire to give you an account of our mission. With respect to the machinery in the Exposition for the making of hosiery goods, both rotary and circular, there was little that was new to us, with the exception of some improvement in the racks of the cleared carriers, which were good, and well-adapted for the self-acting narrowing-machine. The slides which support the needles, whilst the jacks are being drawn, prevent anything like unevenness on the face of the work. The striping tackle was also very superior. These improvements were on rotary frames, exhibited by Mr. Tailbouis, of St. Just, and worked well. All other parts of these machines appeared to us to be of English design, and are being constructed in France by English and French workmen, or under the superintendence of Nottingham and Leicester machinists. This is the case at St Just, and also at Troyes. We found at Troyes 223 rotary frames at work, and all making cleared selvaged hose and half-hose, all round feet, with the seam under the foot, with French narrowed toes. As far as we could learn these men get the best wages of any class of framework-knitters in France, but not so much as the English workmen, as in France one man manages only one frame, and in many cases he has a boy to help him; whereas in England a man and a boy will superintend three frames, therefore the English workmen can better wages.

With respect to the circular frames, they are the same that are in general use in Nottingham and Leicester, with the exception of being more fully developed in France in the art of tucking and making fancy goods, which was in full practice in the Exposition and at St. Just, and likewise at Troyes, which is considered the Nottingham of France. The number of these frames we could not ascertain; but there are many thousands in and around Troyes alone, and the two first circular frames that were made in Troyes, one was made by a Monsieur Gilet, the other by Monsieur Jaquand, and both made in one year—1824: and now they can hardly be counted, there are so many of all sorts and sizes, plain, ribbed, and tucked.

The first rotary-frames that were got to work in Troyes were about eleven years ago, and they were made in Nottingham, by Mr. Moses

Mellows, and one was set up and put to work in Paris by two workmen from Nottingham, named Gent and Whittaker, for one Madame Courtroise, who lived at Troyes at the time; and the same two workmen went forward to Troyes and set the other two up, and put them to work for a Monsiear Pain, a banker; and the next year Monsieur Poron bought a twelve-at-once rib-top frame of Messrs. Hine and Mundella; and the same year Monsieur Poron went over to Nottingham and bought a self-acting narrowing rotary frame of Mr. Luke Barton, who lived then at Hyson-green, near Nottingham. A workman named John Walker went to Troyes with the frame, and set it up and worked it for a time.

We will next bring to your notice two large circular frames we saw in the Exposition, which had the electric wire applied to them, which on the least mishap in the work taking place the battery is set in motion, which causes the machine to stand still, and a little bell to ring to let the workmen know that something is wrong, and demand his attention; this we think is very good, and if put in general practice would be equally beneficial to both workman and employer; it would save the one his time, and the other his capital in the repairing of his machinery, and would prevent much waste. The above, we understood, was patented by C. A. Radiguet, Rue de la Grande Chaumiere, Paris.

There is also a frame in the Exposition on quite a new principle, the only one at work of the kind, belonging to Monsieur Berthelot, of Troyes, and built by the workman Gent, from Nottingham. We are told it was patented both in France and England; it works on the principle of both rotary and circular; some of its motions are very good, but we think it is liable to many stoppages, but still well worthy of notice, and could be farther greatly improved, as we were informed by the builder.

There were several other small knitting-machines of French invention, both plain and ribbed, but not worthy of special notice.

There was a small flat frame, of American construction, worked by latch needles, which made a round hose complete, finished and narrowed off at the toe to one jack.

After examining the machinery in all its details, we next turned our attention to the different cases of goods exhibited by the manufacturers of France. We found upwards of forty different exhibitors; the articles exhibited being chiefly made of cotton and wool; silk, flax, and cashmere are also used, though to a less extent; all of which we understood were carded, combed, and spun in France. The greatest number of machines for making hosiery are worked by the hand, though there are a considerable number of rotary and circular machines in factories worked by power, and these latter are decidedly on the increase. The narrow, or hand frames, are mostly employed by the workmen at their own homes, and these men earn from 20 to 30 per cent. less wages than the men employed in factories. In most of the cases for exhibition there were good articles of both hand and steam-power manufacture; nearly all the hose, half-hose, and socks are round-feet, or the seam under the foot, which is not the case in England, as they are nearly all split feet, or the seam down each side of the foot. The French material is generally good, being from two to five threads doubled together,

which must improve the stocking or any other article; and the narrowing of the toe, French fashion, gives the stocking a more slightly appearance than the English system of narrowing; also, the stripes and embroidery are done in excellent taste, and produce a good effect.

The varieties of goods were numerous; they consisted of all kinds of stockings, socks, and half-hose, striped, plain, ribbed, and tucked; pantaloons, drawers and trowsers, cuffs, mitts, caps, comforters, and neckties; checked hose, straight-down stripes, tartan plaid patterns in several colours; silk stockings, embroidered with flowers and insects, all of which looked beautiful, and, on the whole, one of the best displays of hosiery manufacture ever seen. Lace ankle hose, of the good old English patterns, the old steepie shammy shape; very fine thread stockings, both plain and openwork; men's, women's, and children's jackets, of all kinds and qualities; all sorts of framework gloves, in every size and quality; children's hoods and shoes made by the stocking frame; ladies' vests, and whole suits in one garment, made by the frame from neck to toe, with toes worked the same as fingers to gloves; side patterns of fancy hose, in both silk and thread, looked well; children's lace ankle socks, some very light and cheap goods made from the circular frames, cut up, and sewn upon the sewing machine; ladies' petticoats, open-worked borders, tucked to the hip, plain to the waistband.

Messrs. Tailbouis (St. Just), Tribout (Paris), Seulptor (Paris), Chamhaud (Paris), Lauret Brothers, Guivet, Herault, Poron Freres, and Berthelot, of Troyes, were, in our opinion, the best exhibitors of goods in the French department.

The Troyes Company's case was well worthy of notice. The Belgian and Saxony cases were much like the French, and it would require an expert judge to tell the difference between the samples of work.

As far as we could ascertain, the women take a great part in the manufacturing of hosiery, as in many cases they actually work or overlook the machinery; and a good per-centage of women are occupied in sewing the seams, embroidering the different fancy goods, crocheting, and getting up the various articles for sale.

We did not observe any particular amount of infant labour in any of the factories we visited, none under 14 or 16 years of age; and there seemed a disposition amongst the heads of families to send their children to school till they arrive at a proper age to perform labour. They complained sorely of the long vacation in the summer time from school, namely, two months' holiday. Indeed, we have reason to think that the education of the rising generation is much better looked after in France than it is in our own country.

The greater part of the manufacturers of France have depôts in Paris, which constitute the principal market for French hosiery. Troyes is the chief manufacturing centre, and an important market. About half the home trade is carried on between the manufacturer and the retail vendor, the other half through the medium of wholesale houses.

Exportation is mostly undertaken by commission agents; and from the statistics we saw in the Exposition, the annual production of French hosiery would amount to 100,000,000 francs, of which 15,000,000 are exported to other countries; and as much as 600,000 francs were im-

ported into France last year from England and other countries. Very extensive progress has been made in the hosiery trade of France during the last three years, principally in the rotary and circular machinery. The rotary machines are of English invention, and are now being built by French workmen, but in the principal building shops under the superintendence of an English machinist as foreman. This is the case at Mr. Tailbouis' shop, at St. Just, and also at Mr. Berthelot's shop, at Troyes. Mr. Poron, of Troyes, is a great builder of rotary frames; he has sixty at work in his factory; he has also fifty-five frames, which are known in England as Patchett's patent frames, of Loughborough, in Leicestershire. The rotary and circular frame enables the workmen to produce as many as six and up to twelve stockings at once, of different kinds and gauges, whereas the old-fashioned frame only makes one at once. The circular large frames make as many as twenty courses at one revolution of the machine. The sewing, stitching, and turning-off machines are at the greatest perfection as regards speed and good quality of work produced, and the wages of the men have advanced greatly during the last two years. The old one-at-once hands receive good wages; but they are so very slow, working on the principle our grandfathers did in England with the old presser weight, and turning the bobbin to supply the material for each course.

We wish to say we were well received wherever we went; but found that the English hotel-keepers are more extortionate in their charges than the French. We observed, as a rule, that the French people did everything with the greatest ease and tact, and without much labour, and always made a good finish of what they took in hand, so that nothing could be much improved after they had done with it.

With regard to the English exhibitors, we are sorry to say they were so few in number we have not much to say on their account. There was only one from Nottingham in the hosiery department, and that was the Nottingham Manufacturing Company, who had a first-rate case of all qualities and descriptions of hosiery, and we saw none to surpass them in anything they exhibited, either in silk, thread, or cotton; all looked well, and were generally admired. There were one or two London houses had some good things, but some others not so good. Mr. Smyth's case of Dublin and Balbriggan had some very good plain and striped goods, but his fancy articles were not equal to them. There were three cases from Leicester in the woollen trade; the articles were good, and looked well, and were not excelled by anything of the kind in the exhibition.

On the whole, we are of opinion that the French have made great progress of late years, and that they are continuing to progress; and there can be no doubt that the superior education that is given to the working classes on the Continent gives them an advantage, in some respects, over Englishmen; but there are no workmen so quick and so inventive as our own, so far as we are able to judge.

POTTERY.

By WILLIAM BEARDMORE,
NEWCASTLE-UNDER-LYNE.

I HAVE much pleasure in presenting my report of my visit to the Paris Exhibition of 1867; and, in doing so, you will perceive that I am confining myself to the making department, leaving the ornamental to others, as I wish only to report on that which I know from experience. Having visited the Exhibitions in London, of 1851 and 1852, I can perceive a great difference between those years and the Paris Exhibition of 1867. We could in the former see specimens of work, from the most crude to the most refined, and from the smallest to the largest piece, thirty-six feet in height, forming, too, as those Exhibitions did, a complete history of the pottery department. In the former Exhibition, too, the exhibitors were far more numerous, consequently there was far more competition in the home and foreign courts; and by this we could see more how clay could be adapted to a great variety of uses. However, I believe there is in this present Exhibition the best skill and the best art brought together from the various nations, the manufactories showing their most useful articles: in earthenware, for domestic purposes and sanitary arrangements; in porcelain, for enriching the table and ornamenting the sideboard; in Parian statuettes for the mansion; and in majolica, for the halls, conservatories, and gardens of the rich.

There is a lack of the cheap ware shown, therefore I look upon this Exhibition as a vast show room, manufacturers showing their best and purest wares. After a minute examination of the various stalls, both home and foreign, I have come to the conclusion, and the fact is forced on my mind, that the British workman is not to be surpassed, if he can at all be equalled. Take, for instance, the vases in the foreign departments; there are wood pedestals, metal feet, and where there are openings in the middle, a gilt band is introduced (I suppose to hide defects), and then brass ornaments for handles and tops. Now it must be acknowledged that metal can be worked sharper, and will give the pieces a sharper and lighter appearance, but it is not pottery; in the British department you will not, I think, find a single article so adorned.

The large vases, figures, &c., produced by Messrs. Minton and Co., no matter how numerous the ornaments or great the handles, whether made in china or majolica, are real pottery. This, to my mind, is a great achievement. Then, again, in the foreign, you will find wings without feathers, snakes without scales. True, there is a distinct effect produced,

but when closely examined, there is not that neatness and skill as seen in the pieces above-mentioned.

The perforated tea-ware in the French Government (Sèvres) stalls is exquisite and beautiful. Likewise the Dresden dessert-ware; these cannot be surpassed even by Minton's Chinese lantern and spill-pots.

The attempts by some manufacturers to bring out malachite ware are, to my mind, almost a failure. The straight lines, and the continuous round rings, show that they have not the proper method of mixing or breaking up their various coloured clay to make it appear like this particular marble. The beauty of this body will be found in the French vases, with malachite tops and bottoms, Parian middles, fastened with gilt bands, and in Minton's two large garden-pots, ornamented with lions' heads and bands in majolica. The appearance of this class of pottery is grand, both in brown and green glazes. The imitation of marble is really good.

The porcelain in the Sèvres Court is remarkable, as shown in their tea-service, for its neatness, colour, and lightness; and so it ought to be, when we take into consideration the time the workman has at his command, and the style of his working. The turner sits at his work, propelling the lathe by his foot, using his thumb in an upright position, so that he can keep lifting up the cup or saucer he is operating upon, and feeling where he must take more clay from to make it lighter, and so the workman keeps on until he gets it to its required thickness. The pieces, when fired, glazed, and finished, are very light and transparent. The large vase appears to be thrown about 20 in. in height, and when turned there are notches made to fit one in another, so that when the vases are put together there is a round seam instead of an upright one; and I must observe here that there is a neatness about the seams, whether the ware is pressed or otherwise, that I admire; I suppose that, when finished, it is fired a little, and the seams are rubbed down, and then the pieces are fired up to their requirements. The British workman stands at his lathe, which is turned by an assistant, and shaves his piece from the side; this mode of work is far preferable, as he can get more work out of his hands. Our large pieces are made from moulds; and great skill is shown by the workman in putting together so many pieces.

In concluding my remarks, I say it without fear of contradiction, that the British potters have nothing to fear in coming in contact with foreign workmen; our superior style of work, the beauty and simplicity of our designs, the excellent ornamentation, the richness of colours, the white firm body, the fastness of the glaze, make us feel proud of our position in the great Paris Exhibition, 1867.

TILES AND PAVEMENTS.

By SAMUEL COOPER.

I HAVE the honour to submit to your notice the result of my visit to the Paris Exhibition, for the purpose of examining and reporting upon tile pavements and tiles of all kinds, for useful and for decorative purposes. The productions of France in this class are of an extensive character for tiles in general. The specimens of encaustic tiles exhibited are not so elaborate in designs and colours as those made in England, and seem less vitreous in their component parts, being for the most part easy or soft burnt, and more porous than encaustic tiles generally. The colours chiefly used are black, red, and buff, forming single tile, and diaper patterns, border tiles, emblematic, and monogram tiles. There is also a great variety of the coarse texture, or commoner sort of floor tiles, for the more ordinary purposes, made in clays of the brick-kiln kinds. The relative merits as to beauty of design, variety of colour, form, and shape, are much below the standard of English manufacture in this class. Of majolica tiles for wall decoration there is a great variety, the designs being more artistic, the colouring being very rich upon most of the specimens. Of glazed and enamelled tiles, some good specimens are exhibited.

FRANCE.

The productions of France in coloured cements for ornamental paving, are a varied collection, some of which are rich in design and colour, there being various ways of rendering this class of work: some of the specimens are made in blocks or slabs, others are made in the shape and form of tiles. This description of work is better adapted for wall decoration than for flooring purposes. Of marble and stone incised, and coloured cements for pavements, there is a good collection. This description of flooring is laid around the outside of the Emperor's pavilion, in the park. On closely examining this, I find that the composition inlaid into the incised parts of the design is very apt to expand and swell out of the incisions, making it necessary to be frequently replacing the composition. The cause of this is apparently by heat from the sun. There are other specimens of this class in the Exhibition, of very beautiful design, and rich in colouring. There seems to be more of this kind of work done in France than any other country, by the number of specimens exhibited.

Also specimens of Portland cements, intermixed with refuse, marble, and pebbles, made after the manner of concrete, in blocks and squares. When properly hard, or set, it is rubbed down to a flat surface. This kind of work, in my opinion, is more durable, if less ornamental, than coloured cements for pavements. Annexed is a list of exhibitors and their productions :—

Boulenger (Aunueil, Oise).—Encaustic tiles for pavements in red, black, and buff, chiefly in Gothic designs and diaper patterns; also plain tiles; these are manufactured in the plastic clays, and appear less vitreous in their composition than encaustic tiles usually. They are an easily fired tile, but not badly executed. The price of these range from 6frs. per metre and upwards, according to design.

Carpentier (Seine Inferieure).—Encaustic tiles for pavements, in red, black and buff, also plain tiles of one inch thickness; these appear to be manufactured in the plastic clay, but very little vitrified, and not very hard.

Blondel (Loire).—Specimens of coloured tiles for pavements, in various patterns, and for wall-lining.

Bonnard (Vaucluse).—Specimens of tiles for pavements, in imitation of marble. These are made in a variety of shapes, half-an-inch in thickness, made from moulds, by hand. I should consider these rather an inferior tile for pavements where much traffic was required, and of little artistic merit. The price of these tiles is from 4frs. to 5frs. per metre, which, when considered, may account for their manufacture.

Morisset, C. T.—Tiles for pavements. These are called Egyptian tiles, made in red and black, of a coarse manufacture. They are insalid, but the inlays are poorly executed; but suitable for the commoner sorts of pavements.

Larmaude (Viviers, Ardèche).—Specimens of common floor tiles, also artificial stone tiles, made from lime refuse.

B. Thenard (Béze, Côte d'Or).—Specimens of common tiles for pavements of the ordinary class.

C. Avril and Co. (Saone-et-Loire).—Specimens of common floor tiles; also glazed tiles and roofing tiles; very fair specimens for ordinary purposes.

Guilhaumon-Javelle (Vendeuvre-sur-Barse).—Common tiles for pavements, suitable for cottage houses, for out-houses, &c. These are very coarse and hard-burnt tiles, and would make strong floors; appear to be manufactured like English brick-kiln tiles, or quarries.

Jolijon-Roussaset, Berthoud and Co. (Saone-et-Loire).—Specimens of flooring tiles and hydraulic tiles. These are fair specimens, are strong, and well made; for ordinary purposes, would make good pavements.

Muller and Co. (Ivry, Seine) exhibit floor tiles, and majolica tiles for wall decorations and partitions, in a great variety of designs; these appear to be very good specimens, and of a highly artistic character.

Macé (Paris) exhibits specimens of majolica and coloured earthenware tiles for wall decorations; very good examples for wall and ceramic decorations.

Boeh, Brothers, and Co. (Louvroil, Nord).—Tiles for pavements and for wall decorations; these appear to be good in quality, and workmanship very fair.

Collinot and Co.—Tiles for pavements and for wall decorations; also glazed and enamelled bricks, very good, and in effect very artistic.

Dallage-Lammand exhibits specimens of Portland cements, inlaid in colours, for pavements and wall decorations; also floors in stone and marble, inlaid in coloured cements, or composition; in this style of work the designs are first incised in the stone, and afterwards are filled in with the composition, afterwards rubbed down to a level surface, and then polished and laid down in blocks or slabs, or, if preferred, the inlaying can be done after the slabs are fixed down; also pavements made with cements and irregular pieces of refuse marble or pebbles. These are made in blocks or squares, being mixed up like concrete, and when properly hard or set, rubbed down and brought to a level and even surface; if requisite, the marble forming the inlays can be polished; some of the specimens exhibited are very good, and would make durable and inexpensive pavements.

Vicat and Co. (Grenoble).—Specimens of flooring-tiles, in coloured cements, for pavements of all kinds; this description of pavement appears to be extensively used in France, and makes good pavements where little traffic is required; the designs are very elaborate, and the various inlays of the cement are well and clearly defined, and have an artistic effect when laid down, as almost any colour can be introduced, according to the designs used; as I have stated before, in my opinion they are better adapted for wall decorations.

Alexandre Bex (Paris) exhibits specimens for floors in cement, for pavements, of which there are some very excellent examples; these differ little in character from other work of this kind; the inlaying of these is very clean and well defined.

PRUSSIA.

The productions of Prussia in this class are not so extensive, but superior in quality to France in encaustic tile-flooring, the designs being more varied and richer in effect, the colouring of the various clays being more of a vitreous character. I may especially mention those of Villeroy and Boch, which well merit attention, being of a highly artistic character. The ornamental portions or inlays are well-defined; also the earthenware tiles for wall-linings, and for encasing stoves and ranges, deserve attention, being of good quality. Annexed is a description of exhibits.

Vidal (Kellinghusen) exhibits specimens of earthenware tiles for encasing stoves, ranges, and for wall-linings, chiefly white tiles glazed, of good surface, making good work, with close joints; made by hand, in plastic clays.

Grundmann (Kattowitz) exhibits specimens of floor-tiles of coarse texture, for ordinary paving.

J. Ciesel (Durbach) exhibits specimens of floor-tiles; these are of coarse texture, for ordinary purposes.

Villeroy and Boch (Mettlach).—In examining the productions of this firm I find a large collection of encaustic tiles for pavements. These are inlaid in colours suitable for the designs required. The specimens exhibited consist chiefly of complete designs, forming floors from ten to twelve feet square, for centre-pieces, suitable for hall-floors, corridors, &c.

also diaper patterns, border tiles, arms-tiles, monograms, and a variety of other ornamental designs. The manufacture of these tiles appears to be after the manner of those made in England, with this exception—they have not the backing or extra layer of strong, close-bodied clay, which, to a great extent, keeps the tiles from warping during the firing process, and keeps them from cracking or distorting through unequal contraction; the colours or inlays are less vitreous, and have not the brightness usually seen in encaustic tiles, but have a dough or bisuit appearance. From that I should infer they would take a great amount of dust and grit in their surfaces. The price of these tiles, I may remark, ranges from 10frs. and upwards.

BELGIUM.

The productions of Belgium in this class consist chiefly of the commoner description of tiles, for ordinary purposes, and do not pertain to a more artistic character than red, black, and buff colours, being for the most part soft or easy-fired tiles, and more porous-bodied; they are chiefly made in plastic clays, and are much below the standard of English manufacture in this class.

Josson and Delangle (Antwerp) exhibit tiles for pavements, in red, black, and buff, in squares, octagons, and other shapes, one inch thick, made in plastic clays, very little vitrified after being burnt; soft and easy-burnt tiles, and of porous nature, and, from their appearance, not of a very durable character. This firm also exhibits a collection of glazed and unglazed roofing-tiles, which are fair and good specimens of this kind of roofing-tile; these are made from coarse-texture clays; also some specimens of coloured cements, in squares, of an inferior sort to some which are exhibited by France and Prussia in this material.

E. J. Rypens (Niel) exhibits specimens of glazed tiles for roofing purposes, made in coarse clays, burnt, and afterwards glazed over, and again burnt or fired.

C. Troch-Troch (Antwerp) exhibits specimens of common tiles; also paving lumps; these latter, from their appearance, seem well adapted for floors requiring strong and rough usage.

Nollen, Son, and Co. (Brussels) exhibit specimens of tiles, in artificial basalt, which appear good samples of this kind of paving.

H. Favier (Tournay) exhibits a collection of cement floor-tiles, in imitation of marble; these are superior to those exhibited by France in this kind of work.

Rosaet, Brothers (Arlot), exhibit tiles made of schist slate for floors. These are well got up for floors in this material.

SPAIN.

The productions of Spain in this class are not so extensive, but what are exhibited for flooring purposes are of good quality, and claim especial attention, and are, in my opinion, the best machine-made tiles exhibited by continental manufacturers. Annexed is a description of exhibits.

Nolla and Sagrera (Valencia).—Specimens of encaustic and inlaid tiles for pavements; plain tiles in colours, made by machine pressure, with the dry or powdered clays; are well made, and of close texture, and vitreous when burnt; would make durable pavements; are made in

various shapes and sizes, to suit any geometrical patterns or forms you desire; the colours are good, and of great variety. Of the small tiles, or *tassera*, of the same material, for pavements, a few panels of these are put together, and are of a highly ornamental character. This firm also exhibits majolica and earthenware tiles, of which there are a few good specimens for wall decoration.

Llano-y-White (Valencia) exhibits specimens of earthenware tiles for wall decorations, of a less elaborate character; are well made tiles, flat, and even on surface, and hard burnt.

C. Diaz Moraleda (Moleda) exhibits specimens of earthenware tiles for wall decoration, and lining partitions, stoves, and ranges; these are fair specimens, and for wall tiling generally.

Garreta, Rivet, and Co. (Barcelona) exhibit specimens of tiles for pavements, called hydraulic tiles; these appear to be very hard fired, and are good specimens for common floors; would make strong and serviceable pavements, where great traffic and heavy work is done over them.

ITALY.

The productions of Italy are rather of an extensive character in tiles for pavements; of earthenware tiles there are a few good specimens for floors; and of the coarser kinds of tiles, suitable for ordinary tiling, there is a varied collection, but not so good as English manufacture in this branch of trade; the generality of them appear to be easy or soft burnt. I have noted some of the best specimens of the exhibits (a description of which is annexed) of the manufacture of cement tiles, and coloured cements for pavements; these, I am of opinion, do not excel or come up to the manufactures of France in this branch of trade, being less artistic in design and colour.

Fontaine (Naples).—Collection of earthenware tiles for wall decoration; also for stoves, ranges, dairies, larders, &c. These are fair specimens, and of good quality, for this kind of work.

Antonia Noble (Venice) exhibits majolica tiles for wall decorations. They are very good specimens. Also mosaics for pavements, and for pictorial or Byzantine mosaics. Some very choice specimens are rendered of this class of material in mosaic.

Cristofoli (Padua).—Paving squares and slabs, in Portland cements, and coloured cements for floors.

Pierotti (Milan).—Cement tiles for pavements, in various shapes and colours; more for interior decoration; fair specimens.

Della-Rosa (Parma).—Specimens of tiles for pavements, in earthenware clays; are machine made, and very good in quality for common flooring purposes.

Rondani (Parma) exhibits tiles for pavements, for ordinary flooring, of a coarse texture, machine made.

Piccardi (Val di Pisa).—Specimens of tiles for pavements, for ordinary flooring purposes; these are of good quality.

Totannari (Florence).—Tiles for pavements; also paving squares, for the rough or coarse kinds of paving.

Pazzoni (Parma).—Tiles for pavements, in earthenware bodies; these

are burnt very hard, and are suitable for general purposes; well made throughout.

HOLLAND.

Very few specimens are exhibited from this country of tiles for paving purposes; and those being of the coarser kind of tiles, or quarries, inferior to English.

Van den Broeke (Rhyuboven).—Specimens of tiles for pavements and walls for ordinary purposes; these are well-manufactured tiles.

SWITZERLAND.

The Building Society of St. Imier exhibits specimens of tiles for pavements of the ordinary or commoner description of tile-flooring.

MOROCCO.

Glazed and enamelled tiles for pavements and for wall decorations; these are made in small geometrical forms. Specimens of these are exhibited, forming the flooring and lining the walls of a fountain in the park of the Exhibition; these have a very pleasing and rich effect, the enamels being remarkably good.

TUNIS.

Specimens of tiles for floors and wall decoration; these are very good examples.

ENGLAND.

As to the manufacture of English encaustic tiles and other tiles for pavements, and for wall decoration and for other purposes, the specimens exhibited by Messrs. Minton, Hollins, and Co., Stoke-on-Trent, compare very favourably with all others of a similar character, and on the whole must be classed in the highest rank, whether considered with reference to perfection of manufacture or beauty and variety of design and colours appropriate to the recognised styles of architecture, and conventional treatment necessary to be observed in order to ensure success in this branch of industry. The difficulty in the production of inlaid tiles may be understood when it is borne in mind that certain forms in designs and combinations of colours are incompatible with successful manufacture. The specimens exhibited by Messrs. Maw and Co., Brosely, Salop, I may remark, are also of a high order of merit. For perfection of manufacture, beauty of design, and variety of colour, the majolica tiles exhibited by this firm are very good, the colouring rich in effect. The specimens in geometrical mosaics are also of good design, and carefully executed. This firm also exhibit some interesting specimens of glazed tiles. As to the specimens exhibited by W. Godwin, Lugwardine, Hereford, I must not omit to remark upon the encaustic tiles, made so as to represent in appearance the mediæval style of manufacture, being well adapted for church or mural decorations. The glazed tiles and enamelled tiles are also very good, and rich in effect. Below is a description of these and other English exhibitors.

In reference to the productions of English and those of continental manufacturers, after closely examining the various collections exhibited,

I must observe, I have little hesitation in stating that the continental productions are much below the standard in comparison to English manufacture in this branch of industry.

Minton, Hollins, and Co. (Stoke-upon-Trent) exhibit inlaid encaustic and plain tiles for pavements, majolica tiles, enamelled and glazed tiles for wall decoration, geometrical mosaics for pavements, earthenware and porcelain mosaics for pictorial decorations. In examining the specimens exhibited by this firm, I must not omit to remark upon a centre-piece of tesserae, adapted for an entrance-hall, which closely rivals the antique Roman; and another of a Gothic character, composed of mosaic and large encaustic tiles, representing scripture subjects, very rich in effect, and carefully executed; also some very effective designs of conventional treatment of natural types, such as the rose, hawthorn, mistletoe, holly, oak, ivy, &c. They exhibit also some very fine majolica tiles in various styles, chiefly for mural purposes; some in the manner of the old Moorish tiles, in which the ornaments are formed with their raised outlines, and then filled with enamels of various colours, and others in which the pattern is either embossed or incised. These were, I believe, first introduced by Minton, Hollins, and Co., and have been largely used. Also a highly successful specimen of the application of the deep blue colour, much used by Minton, Hollins, and Co., for inlaid floor tiles. I noticed a large plaque, some eighteen or twenty inches in diameter, in one piece, having a mosaic border; this is an unusual size, and rarely produced in this material; also surface enamelled earthenware tiles, for mural decoration. The patterns on these are applied by a patent mechanical process, and, after being again passed through the enamelling kiln, acquire a great degree of brilliancy and permanence; these are of a high order of merit.

Maw and Co. (Bentnall Works, Broseley, Salop) exhibit inlaid encaustic tiles; also geometrical mosaics and plain tiles for pavements; also majolica, glazed, and enamelled tiles for wall decorations. On examining the various specimens exhibited by this firm, which consist of a great variety of designs and colours which are at once observable, the character of the encaustic designs for pavements appears of a highly interesting order; selections of these are put together, which have a highly artistic effect. A most elaborate piece of tesserae, for a centre-piece, with a specimen of pictorial mosaic in ceramic tesserae, which is carefully executed, the mosaics being coloured throughout their whole substance. This firm also exhibits a great variety of majolica tiles; they are good in quality and colouring, and rich in effect. The plain tiles of this firm are excellent in quality, possessing a hard and vitreous substance when fired, and being extremely hard; these productions are of a high order of merit. These, I may observe, are machine-made, in dry or powdered clay bodies, having but little shrinkage.

W. Godwin (Lugwardine, Hereford) exhibits encaustic tiles, inlaid in colours, glazed and unglazed; also plain tiles for pavements and wall decorations, partitions, &c. Some specimens of red and buff encaustic tiles, which are at once observable and easily appreciated, the clays being so rendered as to represent the mediæval style of manufacture; these are good, and well adapted for church decorations; these well merit atten-

tion, being artistic and well manufactured; the inlays about the usual thickness: the tiles, when fired, one inch thick, even, and straight on their surfaces generally; ornament clean, and not distorted through unequal contraction. The plain tiles for pavements and wall lining are made by pressure, very much vitrified when burnt, and when properly fixed, make durable and ornamental pavements, and well adapted for all kinds of flooring purposes and mural decorations.

The Architectural Pottery Company (Poole, Dorset) exhibit inlaid tiles for pavements, and for walls, partitions, &c. These tiles are also made by machine pressure, and in their manufacture differ a little from Minton's or Maw's process; the inlaying of these tiles, I believe, is done by machinery, which is so arranged that the design or patterns to be represented shall not become distorted during the process of making; the tiles are afterwards dried and then burnt. The designs are geometrical. The tiles seldom exceed four and a-half inches square and half an inch in thickness; there is a variety of colours, but not of such a vitreous character as is desirable for flooring purposes; my opinion is that, for pavements, the more vitreous tiles are the better they will resist the wear and tear of traffic, and be less liable to take into their surfaces dust or grit, or any substance that would assist in defacing them.

T. and R. Boote (Burslem, Staffordshire) exhibit encaustic tiles for pavements, also plain and glazed tiles for wall decorations. Specimens of these are laid upon the floor and walls of the testing-house, British section of park. These tiles are made by machine pressure, with dry or powdered clays, undergoing the drying and firing process similar to other firms; these tiles are of a vitreous character, and of a close texture when burnt. The patterns or designs are mainly geometrical in form. These tiles are made half an inch in thickness, and, I believe, are moderate in price, and are greatly superior to the specimens they exhibited at the International Exhibition in the year 1862.

Malkin and Co. (Burslem, Staffordshire) exhibit encaustic and plain tiles for floors, in various designs, the colours of which are very good; the manufacture of these tiles is very fair for a new firm. Specimens of these are laid on the floors of the testing-house porches, and seem very little worn, considering the great amount of traffic.

H. J. and C. Major (Bridgewater) exhibit specimens of ordinary tiles, or tiles of coarse texture, for common flooring purposes: these are well manufactured, and would make good pavements for cottages, &c.

G. Rooke (Bywater-street, London) exhibits a marble and cement pavement, executed for the South Kensington Museum; showing how refuse marble may be worked up into ornamental and highly artistic pavements, suitable for entrance-halls, corridors, porches, and other floors. The specimen exhibited has for its centre a geometrical design, with a border surrounding it, composed of dolphins' shells, &c., in various colours of marble. May be made in slabs, of any convenient size; when fixed down would form strong and durable pavements. This description of flooring is at once observable, and well merits mention, being made more durable than coloured cement pavements.

Henry Sandham (South Kensington Museum) exhibits specimens of coloured cements for interior wall decorations and partition lining; these

specimens are of a high order, the ornamental parts being well defined ; the colouring having a great degree of brilliancy ; the surfaces having a high and beautiful polish, and highly artistic in effect, being well and carefully executed.

Messrs. White, Brothers (Westminster) exhibit specimens of Keene's cements for pavements and wall decoration, specimens of which may be seen on the floor and wall of the testing-house in the British section of the park ; these, I may observe, are of excellent quality, and well adapted for interior purposes ; any design and colour may be introduced in this material.

I may state that very few specimens of coloured cements are exhibited in the British collection.

T E R R A - C O T T A.

By MICHAEL ANGELO PULHAM,
RODDESDON, HERTS.

IN presenting my report upon the works at the Paris Exhibition in terra-cotta, I beg to make a few remarks upon the uses of this beautiful material. It is a material of great value for architectural purposes—as it is known to have stood the test of ages—as may be seen in the British Museum and the Louvre (in Paris), where there are specimens to be seen dating back thousands of years; examples of frieze ornaments, caps, bases, &c., used by the Romans, Egyptians, Greeks, and many nations of the Middle Ages; also for domestic purposes, as jars, jugs, &c., and for building purposes.

In our own country we have examples of terra cotta as a building material, as at Charing-cross, Cannon-street, and Liverpool-street Stations; fronts in the Strand and Piccadilly; also at many other places; Stockwood, near Luton; at Hertford and Richmond; the fronts of the new buildings at the Kensington Museum, where it has been used to good effect, as all the dressings, caps, columns, bases, arches, mouldings, &c., are made in blocks, and fixed in with the red brick, which harmonises so well.

The Albert Hall is to be of terra-cotta and red brick, and the Science School at the Kensington Museum. The material is becoming more of a favourite with many of our leading architects, and is well worthy of their attention, when it is known to stand longer than stone; as, for instance, the Houses of Parliament, where the stone is decaying, and the carved-work losing its sharpness—therefore its beauty and effect. This stone was selected by a committee to be the best. In many other buildings, the stone has been worn away by the action of the weather; even granite will lose its surface, but the terra-cotta, of close surface and its proper portion of silicious matter in its combinations, and well fired, will repel the rain from its surface: it is not so absorbent as stone; but in adapting it for large surfaces it is of great advantage to the manufacturer to have a front or elevation broken, or in short lengths of mouldings, as at Charing-cross, &c., or in disconnected parts. It is well adapted for window-dressings, panel ornament in friezes, trusses, brackets, caps, columns, bases, heads, bosses, terminals, spandrels, &c.; it is capable of high finish for ornament in relief, &c., especially where brightness is required. It is also the best plastic material for figures,

statuettes, fountains, vases, &c. It requires great care in drying and firing, so as to keep works of this kind in their proper forms, in turning them out of moulds and kilns.

Long lengths of mouldings require great care to bring them out straight and well-fitting.

Many copies of good figures, &c., in terra-cotta, when badly finished, as I have seen them, lose their beauty of form and interest. It is a pity that good works are sometimes not appreciated.

With regard to the quality and character of the work turned out by different nations, as shown in the Paris Exhibition, England stands foremost in the quality of works in terra-cotta, for specimens exhibited for architectural purposes, in beauty of design, good taste, displayed in harmony of colours, and in the adaptation of terra-cotta for building purposes; also for the execution of works, in this beautiful material, requiring artistic skill, forethought, and perseverance to bring about successful results, as shown in many of the English examples. It is not surpassed for good colour, finish, straightness of mouldings, and is in long lengths; it is also well-fired to stand any climate.

Next to England is Prussia. The works shown by the Prussian exhibitors are very good for colour, most of them; and some of them very well finished and very hard. They have many examples in the Exhibition. Their terra-cotta has a very warm tint of colour, also a close surface, and some of their works are large and imposing.

France shows some very good examples of well-finished works in terra-cotta; but most of their work, unless painted, is of too light a colour; looks like plaster or very white stone, and to paint it takes away the character of the material, as a bloom or tint of colour gives richness to works of art in this beautiful material. The French show some very good and well-finished figures and vases, also a few specimens of architectural work, the surface of which has been rubbed or ground down, which gives it a porous surface. France shows some very good work, as figures and statuettes in Parian.

Algeria shows some very poor specimens of vases, which look like dried clay.

Italy shows some very good work in red terra-cotta, but not burned sufficiently hard to stand the weather. Some of the specimens are of good colour and finish, and are excellent productions.

As to the influences affecting the character of the work and trade generally in Paris—clay is to be got cheaper than in England, but not of so good quality; the raw material, or the terra-cotta, which I saw being used in making figures, &c., seemed not to have any silicious matter in it. Some of their clay will not stand so much fire as ours.

The wages or salaries paid to men, women, and boys, seem to be according to their grades or different kinds of work. Good finishers get from 8s. 6d. per day (10 hours) downwards, according to merit or skill; some as low as 2s. 6d.; but at piece-work they can earn sometimes 12s. per day—these are the best workers—others in proportion; some piece-work prices are more remunerative than others; some goods can be hurried over quicker. Women get 1s. 3d. per day of 10 hours; boys according to their abilities.

There are a great many specimens from Vienna, some of which are very good in finish, others not. Some are well fired, but not of a very interesting colour; look dull and soft; but some of the figures, lions, and busts, are of a very interesting character. There are a few examples of architectural character shown. Some vases with coloured wreaths and enrichments are good.

Spain makes a small show of work in terra-cotta busts, &c.

Mons. Gossin (Paris) shows a beautiful model of reddish terra-cotta, representing a shipwrecked party on a raft, waving a flag of distress; very good in design, showing much feeling, but not very hard; has been larded in parts, and put together afterwards, on a large base representing the ocean, all of which has been painted over, to make it of an uniform colour, which spoils the look of the material—that is, it appears as if it was made of cement or plaster. The terra-cotta seems not to have the components necessary to insure hardness and good colour. Mons. Gossin also exhibits some vases and pedestals, also figures on pedestals; very good figures, but, like all their works, have been painted; the finish not good, mouldings not straight, nor pedestals true.

Madame De Bay (Paris).—A collection of figures, vases, pedestals, balustrades, Gothic panels, columns, bases, caps, and trusses. The terra-cotta seems to be of an even surface, but has been rubbed to produce it, which makes it very porous, and shows softness; also, it is rather white. The American Slave is very good for finish, and better colour; also, harder than some of the articles exhibited in the group; a boy balancing a shining ball is very good; a large stag's head, very well finished, of good colour and hardness, measuring about 3 ft. 6 in.; also head of horse, good in finish.

MM. Moynet et Cie. (Paris).—Coloured terra figures for churches, &c.—angels, pilgrims, boys, and statuettes, very nicely finished and well fired; but these take the class of majolica ware.

Mons. Delafosse, exhibitor of small busts, statuettes, very nicely finished and of good colour.

Salvator Marche—A very good collection of figures in Parian; also some well-executed busts in red terra-cotta.

M. Viollet le Duc, architect, and Emile Miller and Co. (Paris).—Specimens of red terra-cotta, Gothic terminals, ridge ornament and tiles, good in colour.

Mons. Garnaud (Paris) exhibits works in very light terra-cotta, hard, some with granulated surfaces, very porous, ornament work not very well relieved or undercut. First, is a Gothic vase, with sprays of flowers and leaves, plain part of vase panelled, and rim enriched; about 2 ft. high and 1 ft. 2 in. over top. Price, 80 frs. A well-executed figure of "Madonna and Child," inscribed on cove of stand "N.D. des Victoires." Price, 184 frs. Also a figure of an angel, about 2 ft. high, kneeling, with arms folded, hard and white, but very porous soft-looking surface. A figure of "Abbess and Nun at devotions," about 2 ft. high. Price, 55 frs. A pair of well-executed winged angels, standing on Gothic brackets; moulding sharp, and ornament well relieved. A vase, about 2 ft. by 17 in., enriched top, scroll handles, lions' heads on two fronts, with enrichments over the sides of

vase, under part "guthrooned," with filleta between, a fluted foot or stand. Price, 55 frs. A well-executed altar or under part of window, or side of tomb, representing our Saviour as a shepherd, with his crook, and lost sheep on his shoulder; on each side niches with figures of two Apostles; all in the Norman style, surmounted with enriched cap moulding; very good work, but of a light colour; the columns at each end not well executed or designed; all the plain surfaces appear to have been rubbed with stone, to produce the effect. A good urn vase, about 18 in. high, with handles, enriched top, and "guthrooned" centre part. Specimens of balustera, hard but white. A well-finished figure of Bacchus, about 4 ft. in height, crowned with ivy, draped in tiger skin, leaning on the stump of a tree, with vine growing up, Bacchus holding grapes in his hand; but the whole of the plain surface has been rubbed with stone, which makes it look more like stone than terra-cotta, being of a whitish cast, of no cotta colour; the price of this is 100 frs. The whole of the good-by Mons. Garnaud are wanting in that beautiful tone of colour the English and Belgian cotta have, which gives a richness to their works. An urn vase, about 3 ft. in height, 16 or 18 in. over top, with Bacchanalian heads, the horns of which form the handles, groups of fruit from each side of heads, horns of plenty, with pendants of fruit on opposite side; mouldings very round, not in good taste, no tint of colour. Price, 50 frs. Specimens of heads, in scrolled shields, very good in design and execution. A length of balustrade, with Gothic panels, cap, and base mouldings, intermediate posts, with sunk panels, not good in design, and mouldings too light for panels, long lengths of cap mouldings, crooked; no tint of colour. A Gothic shaft, in red terra-cotta, good in design and colour, and hard burned. Price, 55 frs. A vase, in red terra-cotta, of urn-shape; colour good, but very badly finished. Price, 38 frs. A specimen of top part of a tower, in light terra-cotta, supported on pilasters, with caps and base, four windows in top part, with enriched key-blocks, trusses, and clusters of fruit, surrounded by balustrade, with angle piers and vases, the whole of a very light colour, well finished, but of porous surface; design good. A large chimney-piece, with frame for glass or picture above, with wood moulding, enriched in French ornamental work, all very nicely executed, but surface porous, and a want of tint of colour; frieze of chimney-piece filled in with three patterns of Dutch tiles, very good in execution—subjects, "Nymphs at play."

Ville de Paris (Mons. Davioud, architect).—Specimens of window-top or head, in red terra-cotta; ornament very sharply pressed, but faint in character; of good colour, and hard burned.

Pavillon de l'Imperatrice (Mons. Davioud, architect).—Specimens in red terra-cotta; ornaments such as terminals, panels, crosses, ridge-tops, &c.; all hard, and well fired, but of pottery style of finish, the water-brush and sponge being the principal tools applied.

Gilardini, Frères.—Specimens of facing tiles or bricks; also roofing tiles for Italian cottages; very hard, and of good colour, light buff.

In the Algerine Court were specimens of vases, standing on marble pedestals, in pink colour terra-cotta: looks like dried clay only, or very slack burned; not good in design or finish, and very soft.

Italy.—A pair of large vases or jugs, in red terra-cotta, of good

design, of a dull colour, not well finished, soft, not well fired, would not stand the weather. If not well burned, the skill and perseverance is not shown, as an object slack burned may come out of the kiln straight and true in form, which, if burned so as to stand the frost, &c., might be crooked, twisted, or cracked, or of bad colour. A figure of Pan, in tinted terra-cotta; hard and close surface. A bust of a female with a rose in her hair, in red tinted cotta, well fired, but very rough in finish, by Marcello.

Rome.—Terra-cotta busts.—A bust of Michael Angelo, of dark colour. Bust of a female, with lace work, well done. Bust of a Prince, in red terra-cotta; good colour, but rough in execution, not well fired, and bad colour. A very good figure, about four feet in height, represents a boy holding a shell to his ear. Two small busts of boy and girl; also a figure of a boy with a dog by his side, a copy from a marble statue in the French or Italian Court. All seem to have been painted to represent red-tinted terra-cotta; well finished. Red-tinted terra-cotta.—1. Bernard Palissy, the noted potter. 2. Lucca della Robbia: soft, and roughly finished. Some well-finished small busts and statuettes, in red terra-cotta; soft, and of dull colour.

From the Institute of Munich.—A "winged griffin," with enrichments at back of panel. Hard, and of good colour. Ornament well finished and well relieved.

Rondani (Parma).—Panel ornament of good colour and finish,—bronze medal; also specimens of shield ornaments; ornamental tile roof, in light cream-colour terra-cotta, well finished.

Virebent, Brothers (Toulouse).—A subject for fountain, in cream-colour terra-cotta; large figure, with water-jar and shell: well burned, and of good colour; shells and stand in majolica ware, the ornament well finished; silver medal awarded. A Gothic finial, in majolica; stands about seven feet high. A large cross, with "Our Saviour," surmounted by the "Virgin and Child," in majolica; cotta base. A beautiful "Temple," in the Byzantine style, on triangular base of cream-colour terra-cotta; hard, and of good colour; the upper part in majolica ware, in many colours; figures of the "Four Evangelists" in niches; "angels" on top. This temple stands about 20 feet high; the price is about £300. Also, by the same exhibitor, a figure in majolica ware, representing the "Virgin and Child," about six feet high.

In the French department is a temple, supported on cream-colour columns, in enamelled pottery, with entwined ornament; hanging baskets, urns, flower-stands, crocus-jars, glazed seats for gardens, in various styles and shapes, some of which would not look very effective without the flowers in colours upon them: the material is hard, and of close surface.

Gille (Paris) exhibits small busts, groups of boys, &c., in red terra-cotta, well finished, but they seem to have been painted; also some very good works in Parian. Four vases, on step pedestals; front of Swedish temple, of light colour, and well finished.

In the Italian Court are a bust, in red terra-cotta; very soft, and dull colour. A beautiful figure of "Venus and Cupid," in red-tint cotta; well finished. Price 500 francs. Two urns on brackets; of good design.

Medallion, in light colour terra-cotta; not of good order or finish. A large jug, on bracket; good shape. Two figures in red terra-cotta; subjects, the "Huntsman" and "Fisherman;" well finished and hard, but not of good colour; also a large cantilever, hard and well finished.

M. Boni (Milan) exhibits a large work, in faint red-tinted terra-cotta, representing a back-ground of recess or doorway, divided into panels, filled in with a variety of well-modelled ornaments and figures, busts in bas-relief, profiles, arabesques, portraits, statues and pilasters, with caps and bases; sunk panels in pilasters, filled in with ornament work, representing a huntsman firing upon wolves. In some of the panels are models of instruments of war, trumpets, &c.; Victor Emmanuel on horseback, leading on his troops in action; Garibaldi on horseback, followed by groups of Italian women; and two figures, representing Rome liberated by Italy; a nicely-finished work, but looks too soft to stand the weather. It is about 30ft. high by 20ft. in width.

In the Wiesbaden department is a centre-piece for fountain; three boys, or dolphins, supporting a large vase or basin, with boy holding a small vase on his head; of good colour and finish.

Henry Drasche (Vienna) exhibits examples of figures, vases, pedestals, lions and sphinx heads, brackets, caps, pilasters, bases, busts, &c., in terra-cotta of a dull heavy colour, not very hard; I do not think it would stand the weather. He shows some very good lions couchant, about 4ft. in length; a variety of vases in light terra-cotta, with dark brown enrichments on them. Some of his figures and groups are very well finished, and are interesting subjects, illustrative of Spring, Summer, Autumn, and Winter, Agriculture, Industry, Commerce, Engineering, Drawing, Architecture, &c. A figure of Apollo, about 5ft. high, better finished than most of his works, price £12; a full-sized figure of Austria crowned; figure of Minerva, 5ft. high; figure of a workman with apron on; specimens of building bricks in red earth, very well fired; balusters, large Corinthian cap, sundial stand, arm seats in terra-cotta, ridge ornaments, roof tiles, in dull colour terra-cotta, and a pair of busts of the Emperor and Empress of Austria, good in colour. This manufacturer is largely engaged in brick and tile making; he has clay pits and coal mines close to his works.

Marsch (Berlin) shows a medallion, two heads, with wreaths of flowers and grapes; very good colour and hard.

P. and E. Marsch (Charlottenburg) exhibit a tall flower-stand, supported by griffins winged, of good colour and well fired—not good in finish; a Gothic window, in cream-colour terra-cotta, with pinnacles, finials, creepers, and crockets; on top moulding, figures and ornaments; medallions of celebrated chemists; vase and pedestal, well-finished and of good colour; specimen of balusters, of good shape; Gothic finial and panels; a piece of frieze ornament, representing Vulcan and boys, in red terra-cotta, but has been painted; a Doric column and cup supporting vase; also other small articles, well fired and of good colour. Also a large pedestal, in cream-colour terra-cotta, panelled on four sides, surmounted by a figure about 6ft. 6in., representing Prussia crowned with a wreath; also four smaller figures on angle pedestals, about 3ft. high, representing Commerce, Peace, War, and Science; lower part of pedestal

forming seats, with sphinx for arm-rests: figures all good in colour and finish.

A. Augustin (Prussia) exhibits a large figure, standing in an arch, representing Minerva; of good colour, not well finished. An example of portion of a front, in red terra-cotta, panelled arch, with caps and pilastrs; lions' heads in panels; groups in the arch moulding; pateras and enrichments in panels, red terra-cotta; good, but red brickwork very crooked, and shows wide and bad joints.

T. Lessing exhibits a small fountain, in light colour terra-cotta; subject—three boys supporting a vase, with boy holding a fish; also a pair of large vases, in red terra-cotta, with boys on top; vine enrichment under rim; not good in colour or finish.

ENGLAND.

Messrs. Pulham (of Broxbourne, Herts) exhibit a large tomb of Mulready, R.A.; it is executed in cream-colour terra-cotta, for the Kensington Museum department, who designed and supplied the models: it is of good colour, and well fired and finished. The effigy was modelled in terra-cotta, and fired without being moulded; vases of good colour, and well fired and well relieved, or under-cut. A large vase, with medallions, in bas-relief, represents Commerce, encircled with enrichments of running ornament, scroll handles, with boy and girl in top part. Also a classic vase, with grape vine entwined, well finished, hard, and good colour. A large vase for gate-pier with balustrade piers or pedestals, all in the park. In the Architectural Court is a large window in cream-colour terra-cotta, with red pateras, heads on moulded key-blocks, all made so as to build into walls of houses, with hollow parts for ties to be worked in; the harmony of colours, &c., is very effective. A length of top cornice, in lengths to build in, with heads arranged to hide joints; heads in red terra-cotta, mouldings in cream colour. Specimens of building blocks, well fired, of good colour, and well finished, for facing good houses, instead of cementing or stone. Specimens of twisted columns, with enrichments, also caps and bases, Parts of several fountains. A small fountain, three storks standing on rock work, with floral stand supporting large shells, with boy sitting in it holding a nautilus shell for jet of water to pass through; stands in a basin 12 ft. over, with divisions for flowers; suitable for conservatories, &c.

Messrs. Cliff and Sons (Leeds) exhibit specimens of terra-cotta balustrade, vase, and pedestal, brackets, Gothic windows, terminals, columns and caps, mignonette boxes, all of good colour, and well fired, but of pottery finish. They exhibit terra-cotta rotors, very large, straight, and well fired.

Messrs. Blanchard and Co. (Lambeth) manufacturers of the columns, caps, and bases supporting the English boiler-house and roof: columns good, in designs by the late Capt. Fowke, R.A.; they are well fired, but badly finished. Two large columns, designed by Godfrey Sykes, late of the Kensington Museum, of tinted terra-cotta, not well finished, supporting arch: specimen of façade of the new buildings for the Kensington Museum; pilasters, with divisional panels, with enrichments in them,

wanting in sharpness and good finish: no parts of ornament undercut, twisted columns, &c.; all of good colour and well fired; wing walls, in connection with this piece of work, built in red brick; a very good example of brickwork, by Messrs. Smith and Taylor, Brompton. Messrs. Blanchard make no show of figures or vases, &c.

T. M. Blasfield (of Stamford, Lincolnshire).—The base-work under large columns by Godfrey Sykes; panels with rose, shamrock, and thistle, very well done, very hard, and of uniform colour. Specimens in Architectural Court.—A two-light window as used in Dulwich College; arch stones in alternate colours light and dark; very effective label moulding, enriched bust in centre of arch in bas-relief, wing-wall built up with red bricks, a good example for colour and workmanship; a window for hotel at Plymouth, designed by Mr. Charles Heywood; a second-floor window for life insurance office, a chimney-piece for India office, frieze supported by figures, wreaths of flowers on it in tinted terra-cotta; key-block and brackets enriched, showing the rose, shamrock, and thistle; all well-finished, and of good colour. Etruscan vases or urns, spandrels, frieze ornaments, very good and well finished; a figure representing a water-carrier, about 3 ft. 6 in. high; all these examples are good in finish, colour, and hardness.

James Tupper (of Taunton, Somersetshire).—Gothic caps, in cream-colour terra-cotta, of good colour.

H. Doulton (of Lambeth Potteries) exhibits, in Architectural Court, medallions in bas-relief, Gothic caps, columns, and bases, of good colour and well fired pottery finish. Machinery Gallery in Park.—Specimens of chimney-shafts, spout-heads; good colour and well fired; four large chimney-shafts, deficient of base, but of good colour and well fired.

George Jennings (of London) exhibits vases, balusters, brackets, tiles, bosses, frieze ornament, of pottery style of finish, but good colour and well fired.

The Bishops Waltham Pottery Company exhibit some very good shaped vases in Etruscan ware, also jugs in red, black, and gilt; three large vases in Egyptian style, with figures of horses and men around the upper part, let in with black and gilt; also examples of bricks for paving and building.

R. and N. Norman (Burgess Hall, Sussex) exhibit moulded bricks in red terra-cotta, caps, tracery, arch bricks, &c.—good colour and finish, sharp, well fired.

It appears there are about 500 hands employed in pottery and terra-cotta works in Paris, numbering about 55 or 60; there are about 420 men, 40 women, 40 lads; only four manufacturers have steam-engines to mix and grind their stuff. About 350 men are in lodgings with their own furniture, 80 in furnished rooms, there are boarders; 40 lodge with their parents. Most of the working men in Paris are obliged to live in apartments and lodgings, there not being many working men's houses near the city. There seem to be about 450 men and lads of good conduct to 50 doubtful ones; some 60 or more like keeping "Saint Monday." There are about 270 who know how to read and write, 30 who can read only, and 70 who can neither read nor write; but the education of the working classes seems

to be improving, as there are over 40 lads under the age of 16 who know how to read and write.

The amusements in Paris seem to be numerous and varied—theatres, dancing-rooms, cafés, restaurants—the latter out of number. There are not many associations in Paris—it is not allowed; there are a few secret ones; the stonemasons have a few. There is an academy or Institute of Arts.

POTTERY AND PORCELAIN,

WITH SOME NOTES ON IRON MANUFACTURE.

By JOHN RANDALL,

CHINA PAINTER.

I VISITED the Industrial Exhibition in the Champ de Mars, Paris, under the auspices of your Society, and have to acknowledge the attention shown me by Mons. Haussoullier, and M. Fouché, whom he provided as a guide to some of the works. I directed my attention to iron and pottery chiefly, in which two departments of industry my employment in early and later life qualified me to some extent for forming opinions.

I might fairly introduce my observations on what I saw, by observing that I consider you have done good service by your arrangements for artisans visiting Paris. If any one ought to feel a special interest in exhibitions of industrial art, it is the workman, whose productions they exemplify. Such exhibitions are memorials of his past achievements, temples enshrining trophies of his skill, where even crowned heads meet to do him homage. The higher flights of human genius are in galleries accessible to the few. These triumphs of ingenuity are for the world; their exhibition, too, affords opportunities for brethren of a craft to meet together, to compare notes, to witness the progress each has made, and to take lessons for the future. Such gatherings are epochs in industrial art; they gauge at the time the height which the tide of inventiveness has reached, and prove starting-points from which greater victories are wrought.

When the present Exhibition was proposed to be held on the other side of the Channel, clubs were formed in large establishments, and inducements were offered for workpeople to visit the Exhibition, but, for some reason or other, as time wore on men grew careless; they ceased subscribing, and even in works where first-class medals have been gained, they abandoned the project and divided the funds subscribed. This must be attributed less to want of inclination in some instances than to want of forethought and to habits of improvidence. Thousands, with convictions of the benefits to be derived from the Paris Exhibition, fritter away means which, by a slight embargo on accustomed indulgences for a few weeks, would take them there. In other cases it has arisen from discouraging reports by those who have been and returned, who have

reported extortionate demands, frauds, wholesale and retail, committed upon the English workmen: to the general high prices of provisions said to prevail, and, in some measure, to railway companies, who were some time in making up their minds as to the terms upon which they would afford accommodation to the working classes. Thanks, however, to the Society of Arts, to Mr. Layard's committee, to its able staff of agents, and the admirable arrangements made for the accommodation of excursionists on their arrival in Paris, the tide, which at one time flagged, has again set in, and thousands have been enabled to gaze upon the wonders collected together in the Champ de Mars who otherwise never would have done so.

We found our way to the *logements*, Place Rapp, paid our 10s. for the week, and having obtained a weekly ticket for the Exhibition, joined the throng passing through the gates into the grounds, stretching right and left, and filling up the corners of the great square of the Champ de Mars, which we found to be an Exhibition of itself. Laid out with care and skill, with winding walks, lawns, lakes, and cascades, it contains temples, palaces, tents, and those humbler habitations which characterise dwellers on the earth's surface at points very wide apart from each other. In some, as in the one built in the Egyptian style, you find shoemakers, tailors, blacksmiths, and others following their different trades. Italy is similarly represented, and other nations are the same; so that the visitor wanders from Egypt to Tunis, from Tunis to China, visiting their theatres, scanning their features and costumes.

Before entering the building, let us say, from our own experience, that some previously settled plan and arrangement are necessary for seeing its contents to advantage. For ourselves, having a special object to serve, we confined ourselves to certain departments, taking the great rings separately, traversing down the avenues that intersect them only occasionally. We entrusted ourselves the task of paying special attention to the iron, pottery, and porcelain departments. With regard to the first, we have only to look at this vast building and its contents to believe, with Francis Hower, that "iron is the soul of every other manufacture, and the main-spring of civilised society." It forms the greatest gun, the heaviest ship, the longest rope, the sharpest lancet, the most powerful and the most delicate machinery; and the strenuous efforts put forth by competing nations in its improvement show how very much they are impressed with the belief of its supreme importance as an element of prosperity. In no one thing so much as this does the present Exhibition show such a rapid advance along the leading paths of progress: and never, probably, was a more complete attempt made to represent the metal itself in the various stages of its manufacture, or to bring together for purposes of instructive study the minerals out of which it is manufactured.

Having, when a boy, had a good deal to do with steam-engines, we devoted some attention to these triumphs of inventive skill. The great beauty of Hick's engine and other American machines, the improvement and inventiveness of those of France—as in the winding and pumping-engines of L. A. Quillacq, some of which have already found their way into this country—and the beautiful metallurgical and mineral col-

lections brought under the eye of the visitor, render this department a very instructive one, and show how very much the natural resources of each country are being developed. We have by us original manuscript letters of 60 or 70 years ago, by William Wilkinson, who, with his brother John, is looked upon as one of the fathers of the iron trade, written during his stay in France (in which country he was the first to introduce coal for purposes of iron-making), predicting the rapid expansion of the iron trade there; and it would really seem as though those predictions were about to be fulfilled. The more notable works are those of Creusot, Chatillon, and Commeny, Montataire, Audincourt, the steel works of Petin and Gaudit (Terre-Noire), Jackson, those of St. Louis. The proprietors of the Creusot works (the largest in France), which give employment to 10,000 workmen, and produce no less than 110,000 tons of metal annually, have made a magnificent show of iron, in all stages, and of various qualities. The proprietors are manufacturers of the engine made for the Great Eastern Railway in this country, which has been so much admired for its beautiful workmanship, and which is to be found in their shed. They boast the largest forged piece in the Exhibition; it has a triple crank, and weighs 30 tons. Near to it is another shaft with four cranks, also remarkable for its finish and proportions, the production of the Commeny and Chatillon establishments, the proprietors of which employ 900 hands, and annually send into the market about 70,000 tons of iron. Their collection includes wire, plates, sheets, galvanized sheets, armour-plates, iron and steel rails, and merchant bars of almost every description. Steel has an important position assigned it in the French department; some immense blocks are shown, and several kinds are exhibited in which improvements are said to have been effected. Mr. Brown, of the celebrated Atlas Works, Sheffield, has also a new species of steel, which is supposed to possess very high qualities. A new steel, from the works of Charente, is also exhibited, which is highly spoken of, and has obtained the gold medal. Steel, from its servicable use and novel adaptations to purposes for which it was not formerly employed, is now largely made by foreign manufacturers, and the Bessemer process of producing it has been adopted by Austria and Sweden. Professor Kraus remarks that "it will be found that all the great improvements in France are due to the great knowledge and judgment of those who have taken the management of the works;" and there is no question but that we need, if we are to keep the lead, or even to maintain a position abreast of others, a better scientific knowledge of the materials used and the results sought to be accomplished. Prussia has also her great smelting works for iron and steel—both of excellent quality. Among those represented are Borsig, of the Phoenix Company, and those of the Hoerde Company. Borsig exhibits springs, plates, and tires forged from a single ball, all without weld. The balls, which have been hammered and forged, and weigh upwards of a ton each, afford sufficient evidence of the quality of the material used.

The Hoerde Company exhibit ores used in their works, and the pig-iron used in the manufacture of Bessemer steel, as well as specimens of the products obtained. There are springs and rails 15 ft. long of Bessemer steel, and steel tires welded to iron in such a manner that even in case of breakage the metals will scarcely separate from each other.

One of the most attractive machines in motion in the English department is Bastier's chain-pump, from the enormous quantity of water it throws up for its size. It makes 30 revolutions per minute, which gives 1,120 gallons in the same space of time. The novelty of this invention strikes every one, and few pass through this portion of the machinery department without stopping to look at it. The beauty of the invention lies in its simplicity.

Near this chain-pump is the coal-cutting machine of Messrs. Jones and Levick, the great merit of which is that it will hole at any angle, and is equally applicable for driving underground headings. It is very compact and simple in its construction, and will hole very hard coal at the rate of twelve yards per hour, and that in a way closely resembling the hand of the workman; it also, by means of compressed air, serves to ventilate the mine. As an instance of the length of time which it takes for an invention of this kind to become matured, we may mention that the famous John Wilkinson, before referred to, invented similar machines seventy years ago, which he called "iron men," but which, in consequence of the prejudices of the miners, fell into disuse.

Some of the French mining and manufacturing proprietors, we observed, exhibited models, plans, and drawings, not only of their works, but of schools, chapels, and workmen's dwellings, showing that they consider it in some measure a duty to attend to the social, moral, and intellectual condition of their workpeople; and from facts coming to our knowledge respecting the means of education supplied, the care taken of sick workmen, and the provision made for them in old age, it really does appear to us that the right steps are being taken by manufacturers for the purpose of surrounding themselves with intelligent and contented populations. This circumstance might possibly account to some extent for the fact that there is more economy in the use of fuel, and more care in utilizing materials in connexion with the iron works in that country than in this. We saw no such plans or models in the English collections.

In connection with mining, it might not be out of place to observe that Professor Gnepert, so well known to the geologists of this country as a successful teacher of that science, exhibits fossils and photographs of fossil plants found in association with the coal measures. The photographs consist of beautifully-executed plates, showing the structure of the fossils, and of natural fossils upon which the scientific might feast their eyes for hours.

The collection is interesting, as showing how widely the same conditions prevailed under which the flora of the coal measures flourished. The writer of this report made a similar collection of fossils from the Shropshire portion of the English coalfield for the Exhibition of 1851, which was purchased by Sir Henry de la Beche for the National Museum, Jermyn-street.

We were also much interested in the collections of ores and minerals from Nova Scotia, particularly in the one exhibited by D. Honeyman, D.C.L., F.G.S., which includes an interesting variety of fossils illustrative of the geology of the country.

Some of the foreign and English exhibitors in metals also show speci-

Nantgarw china, and he will find them to have a yellow, waxy texture and tint, totally unlike any porcelain of the present day. The expense of making it ruined the Nantgarw proprietors, and the cost and risk arising from its liability to crack in the kiln, have deterred others from making it in England. A very near approach, both to the old Sèvres and the Nantgarw, is made by using a larger proportion of felspar (*kaolin*) and bone than in ordinary china, but this also increases the risk, by rendering it the more subject to fly or crack in firing. Thirty years ago, when the rage for old Sèvres china was at its highest, a few London dealers in old Sèvres china made large fortunes by purchasing white specimens, or those slightly decorated, and having them repainted and regilt in this country. Their agents in France attended sales and sought every opportunity of laying it; the slight sprigs of flowers were then removed by fluoric acid, and elaborately-painted subjects of flowers, birds, cupids, and figures, chiefly from Boucher and Watteau, were painted in richly gilt shields, with turquoise, green, and other grounds. White dessert plates were greedily bought, at prices varying from a half a guinea to a guinea, which were resold at from five to ten guineas. In order to deceive the purchaser the sharp touches of the chaser on the gold were rubbed off by the hand; sometimes a dirty greasy rag was employed to make it look as though it had been a long time in use. To increase the deception the china when finished was sent off, redirected in London, in French; and knowing old lovers of Sèvres china, with long purses, were apprised that a package of choice articles, bought of Madame — or at the Duke of —'s sale, had arrived, and they flattered themselves highly in being privileged to see the box opened. Bargains were quickly struck on the spot, lest the article might fall into other hands, the buyer fancying himself fortunate in securing a costly article before others had had a chance even of looking at it. The writer has several times seen specimens of his own painting at noblemen's houses, which he was informed were choice productions of the Royal Sèvres Works, purchased for large sums. In returning through London from the Paris Exhibition the other day he saw in a shop in the Strand similar old acquaintances, which the owner values, no doubt, at a high price, and which he believes to have been altogether the productions of the last century at the old Sèvres works. It is not necessary, however, to have *frill* body in order to produce the same effect upon the surface; a good thick glaze with a high fire will enable you to get the same mellowness of colour and effect. In proof of which we may mention, that some time ago Mr. Rose, of Coalport Works, one of our first and keenest manufacturers, purchased a pair of his own vases, believing them to be old Sèvres, and introduced them as examples. They had been bought from his own warehouse in white, were painted by the writer in the old Sèvres style, sold in London, and bought some years after by the manufacturer.

The rage for old Sèvres china did more good than is generally imagined—it encouraged the importation of some of the best specimens of French ceramic art, and the close imitation to which it led had the effect of educating a class of artisans who subsequently turned their attention to English porcelain painting, which led to a rapid improvement in the art. In this respect the English manufacturers, the

English aristocracy, and the English public generally, benefited by the expenditure of French funds in the improvement of the ceramic art, which gave a spur to improvement in this country. In fact, whatever may be said to the contrary, the writer is of opinion that the old *Sèvres* china, as manufactured up to the Revolution, had merits which no china in the world besides possessed, and which have not yet been surpassed. Although thousands of pounds have been expended by the more advanced manufacturers of china in England in their efforts to produce the rich turquoise, and the more delicate rose tint, to which the famous Madame Dubarry gave her name, the imitations, excepting with regard to the latter colour, are generally poor and feeble. For lucid transparency, combined with a creamy mellowness of tone, for richness of ground and gradations of colour, it remains unequalled.

The objection to *paste tendre* and soft glaze commercially, is, that the surface is easily scratched, and the great desideratum is to combine the qualities of the two. In other words, the problem to be solved is, how to have hard glaze and yet have the painting soft and mellow; and this can be accomplished by a little extra thickness of glaze, and by preparing the colours with less flux, so that they might stand a greater heat in the enamelling kiln. Some of the French, and some of our English manufacturers, have recently softened their glazes to suit the colours; some use a softer glaze for ornaments, as there is no danger of scratching, and a harder for ordinary dinner and dessert ware. Minton uses a softer glaze than formerly, and more of it; hence the rich grounds and soft sinking of the painting into the glaze, specimens of which are to be seen on his stall. The same may be said of Copeland; consequently their grounds rival those of modern France, in design, modelling, combination of colour, and general decoration, we should say those houses are equal to any, either French or English. One thing worth mentioning, before leaving this part of the subject, and which we have not seen noticed by critics, is, that the most remarkable specimens, those upon which these eminent manufacturers most rely, are paintings by French and German workmen. We mention this merely as one of the collateral facts supporting the great truth—that in matters relating to the higher branches of art we are deficient. There is no English flower-painter equal to Hurten: and, if we except Allen, there are no English figure-painters equal to those employed by Raino and other French manufacturers. We except a kinsman of our own, Mr. C. Grey, of Chester-terrace, London, whose pictures on porcelain in the oil and water colour department have been pronounced the best in the Exhibition, because he is a painter of pictures only. Take Lerosey's desert service, with subjects from the ceilings of the Palace of Versailles, his miniatures of the Emperor and of the four Italian Poets, or other figure-subjects in M. Raino's collection, and there is an elegance of outline, a delicacy in the flesh tints, and an artistic treatment generally, which shows how well the author has profited by the advantages which France affords to her workmen.

CERAMIC STATUARY.

In addition to the *Sèvres* Works we visited those of M. Gille, who,

where the money comes from, as every one seems bent upon pleasure. In London one can understand the loads omnibuses, boats, and railway trains pour into the city in the morning; one knows that they are to be found behind the desk or at work in some way all day, while the streets are all day filled with crowds, who seem in a hurry lest they should miss a good day's work; the traffic, the houses, and shops, all look like business, while the closed churches—grounded out of the reach of the stream—appear to belong to some past epoch. In London, too, you hunt out great buildings at long distances from each other. In Paris they appear in groups, and amaze you by their magnificence—palaces, government buildings, gardens, fountains, obelisks, bridges, and triumphal arches crowd upon the eye at one view. You take a stroll on the boulevards, a trip on the Seine, or a ride on an omnibus, and the whole population, particularly of an evening, appears bent upon a holiday. Just now, too, the illusion is the more complete, from the number of persons from the country and from other countries who crowd the Palais Royal, the Champs Élysées, the Bois de Boulogne, Fontainebleau, the Louvre, the Luxembourg, Notre Dame, St. Cloud, Versailles, and a score other famous spots and places. For three sous you can travel through the most populous portions of the city, and get good views of its wonders. We went to Versailles on Sunday, and were surprised to find a continued stream pouring for hours through the miles of galleries and gardens of the Palace, till 100,000 persons at least were present. The fountains played for an hour or two, and in the evening a grand display of fireworks took place, which terminated at 10 o'clock. We care little for fireworks in a general way, and we only waited to see these because every one else appeared to have come for that purpose. We must say, however, we were well rewarded. The night was dark and favourable, and the golden tracery of vivid light showed well against the trees, and threw a bright reflection on the water. Then floods of white, ruby, and emerald lights illumined the sea of human heads; stars—red, violet, and green—shot into the atmosphere, amid columns and cascades of fire; and volcanoes sending forth dazzling showers of stars and a perfect rain of golden fire succeeded; the fountains also shot forth their waters with the greatest force, and the air and water resounded with crackers.

Several trains had left with returning sight-seers before we reached the platform, and we met five other empty trains returning for the thousands left behind. As we returned to the station, theatres, shooting galleries, merry-go-rounds, and similar entertainments were in full vogue, and, what seemed strange to Englishmen, grown-up men and women were enjoying rides on their wooden horses.

BRICKLAYING.

By GEORGE HOWELL.

PARIS is not a brick-built town, as London is. It would be as absurd to expect it to be as to expect that Bath will discard its stone, and manufacture bricks to supply its place. In building a town one of the first considerations by a builder would be, what materials are most available for building purposes. Hence on clayey soils we use bricks: in Cornwall we use granite; and so on, according to the locality, we have the intermediate strata used for building purposes. So universally is this the case, that whilst in some parts of the world cottages are built of marble, in Brighton they are built with pebbles picked from the sea-shore. This it is, indeed, that frequently gives character to a town, so far as its buildings go, inasmuch as the cost of materials is a very important item in building operations. The manufacture of bricks by machinery will considerably modify these conditions, inasmuch as the brickmaker (with machinery) can use up soils which, when it was known by his naked feet, and pressed into moulds by his hands, he found to be impossible.

I found on inquiry at the two places where bricks were being made by machinery in the Champ de Mars, that there is plenty of good clay in and around Paris. The specimens I saw and handled were superior to much that we use in this country, and the clay would take much mould, or earth, to moderate its strength. (I may here note that what I handled had been through the mill, and therefore was in its finished state, prior to being pressed into the moulds.) After the line from Paris to Versailles, there are some brickfields in which they are made by hand and burnt in clamps; and both the green bricks and those which had been burnt appeared precisely similar to those manufactured in the Exhibition, with this difference, that the machine-made bricks were far superior. Even at home. Compare the fine square machine-made bricks of Manchester, with their fine arris for quoins, with the hand-made bricks of the "fields" around London. The superiority of the former is evident.

Notwithstanding the preceding remarks, there are a great many bricks used in Paris. The internal walls, vaults, arches, &c., in the new wing of the Louvre, and also in that unique building, the New Opera House, are all of brick. This is pretty good evidence that brickwork, for ordinary purposes, will be the cheapest and (both considered together) the best. One other circumstance shows that brickwork has its advantages, viz., that there is a company started in Paris endeavouring

to compete, in building operations, by the use of concrete. It is called "Coignet's *béton aggloméré*." The company consider that they can build cheaper, that the walls occupy less space, and that the entire building is more solid and fireproof. The composition of the *béton* is as follows:—20 parts sand, 4 parts lime, 1 part Portland cement. I visited the large block of buildings in "Rue de Miraménil" and "Rue de Naples," built by the company with "*bétons agglomérés*" composed as above. The block of buildings is very large, and is seven stories high. The entire block is composed of this concrete—walls, vaults, stair-treads, and risers; ceilings (or rather between the floors and ceilings, each is covered in with this concrete, slightly springing from slim iron girders), and even the roof. It is, in fact, a fine specimen of the kind of building, and should give the projectors and proprietors satisfaction. The building is certainly fireproof, there being but very little wood to burn throughout the entire block. The floor is composed of very narrow slips, only three inches wide, with a very few similar slips bedded in the concrete to nail them to. Then there are the doors and window-frames, all of a slight character. The solidity of the building was something remarkable. Not a single crack or fissure could we discover, as the result of settlement or anything else. Yet I consider it the heaviest block of buildings I have ever seen covering the same space of ground. This fact argues in its favour. With regard to their walls occupying less space, there was no instance of it in this example of their work. The proportions stand as follows:—English brickwork, 2½ bricks: *béton*, 2ft. — equal: English brickwork, 2 bricks—18 in., *béton*, 20 in.: in favour of brickwork, 2 inches. English work one brick, or 9 inches: *béton* 12 inches; in favour of brickwork, 3 inches. In their vaults the *béton* was thick at the haunches and about 7 or 8 inches at the crown, but in all cases it would equal our 9-inch vaults, or two rings of 4½ each, and in many cases exceed it. Then with regard to price, a well known builder and myself went into the figures, and the result was given to the manager on the spot. Their work on the average cost £15 per English rod; we considered that brickwork equal thereto could be done for £11, or at most £12. It is but right here to state, that the company have put forth a statement with figures, of which this is an abstract:—They estimate that in London they can build in *béton* per metre cube, or rather let us take equivalents in English, 36ft. cube at the rate of £1 6s. 11d., whilst in brickwork they estimate it would cost in mortar, £1 9s. 2d. or in cement, £1 15s., or in *béton*, with 1-20th part in cement, £1 10s. 8d. Thus, taking their own figures at a saving of 2s. 3d. in a metre cube, I do not think that they will be able to compete with brickwork; yet under a variety of circumstances, *béton* will be most valuable. There is no first-class brickwork done in Paris, judged by an English standard. The best attempt yet made was at their market "Les Halles," which was executed at the expense of the corporation of Paris, and designed to ascertain the difference in cost between stonework and brickwork, the result being as follows:—Brickwork per cubic metre, £12, or £8 8s. per cubic yard; whereas Raviere stone, which is considered very good, is delivered in Paris at £4 8s. per cubic metre, or about £3 7s. 6d. per cubic yard. This latter price leaves so large a margin for working and fixing, that it

may easily explain how little first-class brickwork is done in Paris. But this is only judging from their (the French) standard, for a more monstrous absurdity could not be conceived than the mere notion of paying at the rate of £34 6s. per rod for brickwork. Yet this is the price, I am informed, these "halles centrales" cost in erection. It is a very fair piece of gauged brickwork, every brick rubbed and squared, bed and face, with joints not exceeding one-eighth. The price seems incredible when we compare it with the price paid here. I do not think that the finest piece of gauge work in London could exceed £20 per rod, and in very many instances excellent work is done for £15 or £16. To be precise, let us take the following for good work (book prices):—Brickwork, all stocks, per cubic yard, £1 9s. 9d.; add for best malms or red-rubbers, per foot super, $4\frac{1}{2}$ (perpend. kept), 3s. 4½d.; add for putty joints, not to exceed one-eighth, 1s. 10½d., total, £1 15s. Here then we have £1 15s. per cubic yard as against £8 8s. Thus, with every allowance for good gauge work, set in putty, we have only £19 5s. per rod, as against £34 6s. If I am asked the reasons for so great a difference, my answer is, I can discover none.

The prices for materials, taking one thing with the other, will be found pretty nearly equal. I quote English prices, as follows;—Bricks, 12s. to 15s. per 1,000; Dorking lime, 16s. per yard; Thames sand, 6s. 6d. per yard. French prices;—Bricks, best hard stocks, 40 to 50 frs. (22s. to 40s.) per 1,000; best lime, 24s. 6d. per yard; best river sand, 4s. or sifted, 5s. 2½d. per yard. By examining and comparing the prices, we find their bricks and sand are cheaper, their lime dearer. Both will nearly balance.

STYLE AND QUALITY OF WORK.

In good brickwork, the first thing to be considered is "bond." There is, properly speaking, but two sorts of bond; one is called "Old English" and the other, "Flemish." Old English bond, so called, as it was the only style used in this country up to the time of William III., consists of alternate courses of stretchers and headers; and the Flemish bond, introduced by Flemish workmen who came over with the Flemish king. It consists of alternate header and stretcher in the same course. In none of our old buildings will you see Flemish bond.

I once saw a curious historical blunder by an able architect, a member of the Antiquarian and other learned societies. Having a great regard for the 13th century style, he determined to carry it out, in all its details, in a large residence he built for himself on the banks of the Thames, about 12 miles from London. He carefully prepared all his plans, had castings made purposely for bolts, brackets, grates, &c.; he specially selected his tiles from Minton's for the halls, and also the flint for the roofs; polished oak floors, beams, stairs, &c.; and doors and windows, &c., scrupulously exact as to their historical character and appropriateness. In fact, he bestowed all possible care on his residence to make it a reflex of the 13th century style. As it neared completion, he invited several friends from London, professional and otherwise, to inspect his mansion. Many, very many, expressed their hearty approval. About this time I went to take charge, as foreman, of a

large pair of villas, built in a kind of Venetian-Gothic style, close to the 13th century specimen I have described. I at once noticed the unfortunate incongruity, but did not deem it advisable to rush into print with the discovery, as I knew that the proprietor had bestowed great pains on, and felt great pride in, his undertaking. Some short time after, he came to reside in his chosen home, and personally superintended the few finishing touches to his creation. One morning, about breakfast-time, he came to me, and asked my opinion as to the style, &c., of his residence. After cordially approving very many things which he pointed out with some enthusiasm, I told him that it was all very well, but he had dressed it in a modern costume. I then explained to him that whilst he had bestowed such care upon all possible details, yet he had adopted a style of brickwork totally unknown in this country till the time of William III., viz., Flemish bond, when it should have been the old English. He at once saw his error, and acknowledged it; but I determined not to send a letter, as I had at first intended, to the *Builder*, for I saw that it would give him intense pain. This is the first time I have mentioned the fact, and now, with your permission, I suppress the name of the architect and the name of the place.

The English workmen pay great attention to bond, and pride themselves upon its perfection. Many architects and clerks of works select old English bond for heavy buildings, on account of its superior strength. I cannot, of course, deny that its strength might exceed that of the Flemish bond if carried out in all its integrity, but this I affirm, without fear of contradiction, that Flemish bond is equal to every possible and impossible emergency. I defy any architect to point out any one instance of its failure to sustain, without fracture, any superincumbent weight or pressure ever brought to bear upon it. The reason of failure, when any such has taken place, is not the weakness of the style of bond, but the want of bond, by snapping header after header, sometimes for whole courses, in order to save a few front bricks, whether red-rubbers or malms. If the courses are laid regularly and fairly—the headers being properly and constantly placed their whole length in the wall—it cannot fail; I defy it to do so. Nevertheless, the Old English bond should always be used in rough work, inside and outside, as it is a little quicker in practice, and all the “bats” can thereby be used up with facility. And in this there is no fear of failure with regard to strength, as walls never split or separate in the centre: their fractures are generally due to the foundations, for a heavy pier will settle more than a light one, and hence it frequently happens that the fracture takes place through the arches of windows or doors. If I were asked whether the old English bond, or style, cannot be made to look well for front work, I would answer—Yes. But it will always look heavy and confused. It can never have the light appearance of Flemish bond, which I will now examine in all its details, with such examples as I saw in Paris.

This bond, as I before stated, consists of alternate header and stretcher in the same course. It should be started thus:—First a stretcher, then a header and stretcher, to the end of the piece of wall or pier, always taking care that there be a stretcher at either quoin. (Sometimes this cannot be done in very small piers; the bricklayer will then reverse one

of the quoins.) This first course being "run out," start the next course with a header, then a "closer" (a quarter-brick), then a stretcher, &c., till the end of the second course, taking care that both quoins are started alike, as I before pointed out. The following rules should be observed :—1st. If there be any "broken bond," i.e., if in running out your bond you find it does not finish alike at both quoins, then start from each quoin and work to the centre, so that the broken bond, if there be any, may fall in the middle of the pier. Sometimes it will require two headers instead of one, if so, let them follow each other all up the pier until its finish; if you do not, it will detract from the entire piece. Sometimes it will require three headers, then you will find that it will require two stretchers in the next course, and so on all up the wall. (This is not considered broken bond.) In some instances it will require a three-quarter, but this should at all times be avoided, if possible. Never, under any circumstances, place a closer in the middle, or any other portion of the wall or pier, except at the angles next to the header, as before described. To be particular with regard to this, I give the following examples :—

FIG. 1.



PERFECT SPECIMEN OF FLEMISH BOND.

FIG. 2.



BROKEN BOND, TWO HEADERS IN CENTRE, SHOWN BY DOTS.

FIG. 3.



This is considered perfect bond, as there are three headers in the centre in one course, and two stretchers in the other, as shown by the dots.

FIG. 4.



BROKEN BOND, THREE-QUARTER IN CENTRE.

The beauty of brickwork will very much depend upon the "perpend" being perfectly kept, that is, the perfect regularity of the perpendicular joints right up the building. Stretcher over stretcher, and header over header, should be kept parallel; so also should the broken bond, if any occur. If this be neglected, the beauty of the work is entirely destroyed. The work should also be kept upright, and level on the face, the bricks being laid "square to the line."

I have been thus precise, because I found some of these rules entirely disregarded in Paris. In the first place, the French workmen use a three-quarter at the quoins on the top of the stretcher, instead of a header and closer, as in the examples. Thus the pleasing effect of our quoins in England is entirely lost. I found this rule almost universally broken in Paris.

2nd. If they have broken bond, they seem to be altogether indifferent as to whether it continues parallel with itself up the pier, or whether it be chased from side to side. I shall give some examples of the improper work I saw in Paris, and indicate the proper style, as we should do it in England.

I shall first take some of the buildings on the Champ de Mars. There is the Turkish building, with five courses of red Flemish bond, alternate with 15 in. blocks of white stone, being equivalent to five courses alternate of red and white. There were three-quarters at all external quoins, and a three-quarter followed by a header at the quoins of all openings. In one pier there were a three-quarter, header, stretcher, and a closer, as in Fig. 5. It should have been a stretcher on either side and a header

FIG. 5.

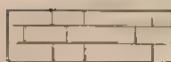


FIG. 6.



FIG. 7.

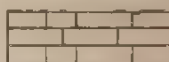


FIG. 8.



in the centre, with a header and closer in the next course, and a stretcher in the centre, as in Fig. 6. Another pier had two headers, one stretcher, and a header, as in Fig. 7. It should have been two stretchers and a header, as in Fig. 8. In several instances there was what we term chimney-bond—two stretchers and a header, as in Fig. 8, when it should have been two stretchers and a header, as in Fig. 6. One larger pier had header, closer, stretcher, header, stretcher, header, and three-quarter. It should have been header and closer on either side, followed by stretchers, and two headers in the centre. (See Fig 2, page 193.)

Arches of the same building.—There were a simple 9 in. "camber on face and soffit, and a large "semi" 14 in. face and 25½ in. soffit, the

is a brick and half face and two and three-quarters bricks soffit. The face-bond was right, not so the soffit. The long flat arch in the gallery of this building, with two and half bricks soffit, was correct bond: but the piers in support thereof were closer, stretcher, header, and three-quarter, instead of two stretchers and a header, as in Fig. 6. There were six "semi" arches, with 18 in. soffits, all of which were wrong bond, being two three-quarters and a header, when it should have been two stretchers in one course, and two headers with closers on either side, and a header in the centre of the next course, &c.

At the entrance of the "Catacombes de Rome" there was a peculiar arch, constructed on the principle of the trefoil, with three small sub-arches and pendants. It was executed in alternate sets of red, white, and black bricks. It looked somewhat tasty, but was essentially weak.

In this criticism on bond let it not be thought merely a matter of taste, for even if any person were disposed to question my conclusions as to the appearance of the several piers and arches, which I have examined and shown by examples, it still remains a fact that the bond of Fig. 2, page 193, is stronger than that of Figs. 1, 3, or 4.

Chapelle du Parc.—This church presented a very pleasing appearance, and to a non-professional eye would be gratifying and satisfactory. It is built of yellow bricks, with sunk joints, drawn by a thick jointer; has large buttresses, and large Gothic and some small Norman windows. It has an octagon tower on a square base. The arches are coloured red, black, and cream colour. Its fine windows, bas-reliefs, and other ornamentations, together with its roof—partly heavy French tiles in different patterns, and specimens of cut slates—make the building, as a whole, look well. But the brickwork is very bad—no regularity of bond. The openings had been made too large, and patched up with cement $4\frac{1}{2}$ inches and 5 inches of a side, coloured and jointed to appear like bricks. It is now cracked away from the brickwork, and shows a straight joint all up the original reveal.

Habitation d'Ouvrier Agricole.—This, on the whole, was the best specimen of Flemish bond I saw. It was built of red bricks, interspersed with black bands and other ornamentation. It had pilasters, mouldings, string-course, and cornice, the whole of which was very fairly done. My only complaint was, the bricks were too thin, being only 2 inches.

I now take engine-houses and shafts. All of these need not be given in detail, but I will give a general description.

H. Fland (Paris).—Engine-house, Flemish bond, but irregular; pilasters, chimney-bond. The shaft was built by Cordier, Ainé. Old English bond, irregular. Base, square plinth, with 10 set-offs, circular die of 10 courses, moulded cornice and torus base. About 12 feet up the shaft are three bands of three courses each, black, white, and black, then a moulded band of stone, with the monograph N. It had a heavy stone cap.

Farcot et Fils.—Engine-house and shaft. Built with very hard bricks. Shaft, nonagon plinth, octagon die, with angle piers and panels, a heavy cornice, and large set-off, then a circular moulded base, with extra members in black and red. The shaft was of yellow and black bricks, with a heavy-moulded brick cap.

Dumon and Co. (Belgium).—Engine-house and shaft. Defective Flemish bond. Shaft, old English bond, large square base, with panels; bond fairly kept. There was a moulded cornice and cap in brick.

M. E. Costier (Amsterdam).—Engine-house, very fair bond. Two brick piers, and 14 inch arches on face and soffit, correct bond. Alternate, three courses of red brick and a block of stone. The shaft, built by Cordier, Aimé (Paris), had an octagon base with angle piers; moulded set-offs, cornice, and base, with yellow bands running up the entire shaft, finishing with a heavy stone cap.

L. Vassivière (Lyons).—Engine-house and very handsome circular shaft, in alternate five and six courses of red and cream colour, running spirally all up the shaft. The whole was well executed.

Cordier (Paris).—Engine-house and shaft. The brickwork in the engine-house was pretty good. The Flemish bond was well kept, except in one or two instances, and rustic quoins, also properly kept, with stone and brick alternate. The shaft was circular, on an octagon base, in red bricks, with white bands and diamond patterns all round.

P. Boyer (Paris).—Engine-house and shaft. Octagon plinth, with moulded cornice and circular shaft, split from bad bond.

M. E. Costier (Amsterdam).—Small engine-house and shaft. Square base, circular shaft. Old English bond, very well done, and perpend well kept.

Galloway and Sons, Manchester.—Engine-house and shaft, with three large tubular boilers. The bond of this was well kept. The shaft was a large circular one, with ten strings and moulded brick cap. The base had a red string and cornice. There were black bands of two courses each, with diamond patterns interspersed running up the shaft. It was tuck-pointed to the height of 25 ft.

For other specimens of similar work there are the water-works on the banks of the Seine, with a very good and lofty shaft, equal to most ordinary shafts in England. The entire works are of brick, and tolerably well done.

There is also the Imperial Tobacco Manufactory, with a lofty shaft, and moulded plinth and cap. The fixing of furnaces and boilers is pretty much the same as in England, and therefore need no comment.

Most of the railway stations in and around Paris are of brick; as are also those on the line to Versailles, starting from L'Ouest. But they need no comment, as they do not pretend to any ornament whatever. The large station of Amiens is also of brick. So also are some of the barracks, as, for instance, the large cavalry barracks at Versailles.

There is a very good specimen of wall-work, in red bricks, at the corner of Avenue Rapp. At several of the markets and other places, there were large specimens of frame-work filled in with bricks, as, for instance, the large market facing the Square du Temple. They are alternate, five courses red, three cream-colour.

MODELS IN BRICKWORK.

It is seldom that brick models deserve any attention. Here are some exceptions in the outer circle:—

Viaduct de la Fure.—Six arches, fairly done.

Reservoir de Ménilmontant.—Miniature brick groined arches, well done.

Pont D'Albi.—A model arch and subway for passengers. The soffit was right bond, but the face was defective.

Sluice-gates of the Citadel Du Havre.—A very good specimen of the inverted arch, or culvert, but bad as to bond.

Usine Hydraulique de St. Maur.—Rustic quoins, but not right bond.

Undoubtedly the best specimen of brickwork in Paris is the triumphal arch, or "gateway to the front entrance of a mansion," a full-size model, in the outer circle, by George Smith, of London, with terra-cotta dressings, by Blanchard. It has a terra-cotta base; two piers, one on each side, with moulded panels, and small cut strings. The centre consists of panels, projections, and mouldings, with terra-cotta fascia, frieze, and cornice. The entire piece is a fine specimen of gauge work in Flemish bond, in good red rubbers. Every pier is correct as to bond, as in fig. 1, p. 193. The bond is preserved in the recesses, set-offs, and angles, whether external or internal. The brick mouldings are well and finely worked. The joints are dipped, and therefore show the workmanship well. It is a credit to the workman who did it, and to the employer who had it done. The arris of the quoins, and the members of the mouldings—quirks, beads, cyma-recta and cyma-reversa, &c., &c., were as fine as if in marble. Thus the only good specimen was London work. The back part was in Old English bond, well kept, and a large two-ring arch.

MATERIALS, &c.

Materials of every description were to be found in the several courts. There were very good moulded red rubbers, for arches, cornices, &c., of almost every shape, from Norman's, Burgess-hill, Surrey. Also good specimens of ridge and other tiles. Good specimens in fire-clay, from Hasper and Morris', Stourbridge.

In the Belgian and Swedish departments there were some very good specimens of bricks, tiles, and slates.

There were bricks of all sorts, mouldings, strings, caps, bases, cornices, arches, keys, and ornaments; also tiles, paviers, fire-bricks, burrs, &c., in the French department. There were plenty of specimens of good roofing-tiles contributed by France, England, and Belgium. Also of encaustic tiles by Minton and other English manufacturers, from Bridgewater and other places. The Welsh Slate Company displayed some capital specimens of roofing-slates, both plain and ornamental. In the matter of pipes, chimney-pots, and other things of a similar description, Lambeth, Burton-on-Trent, and other places made a good show. Terra-cotta ornaments were well represented, and appeared to me to be very good in quality and design.

WAGES AND HOURS OF LABOUR.

The French bricklayers are paid chiefly by the hour, but have a recognised day of ten hours. Their wages are from 5 francs 5 sous to 6 francs and a-half per day.

CONDITIONS AND DIVISIONS OF LABOUR.

The bricklayers of Paris are masons also, as in many parts of England where brickwork is only occasional.

EDUCATION.

It would be presumption to speak much of these subjects upon so slight an acquaintance, but I tried in a great number of instances, taken at random, and found every one could read. I was informed that they are all able to read and write.

HABITS OF LIFE AND AMUSEMENTS.

It is difficult to get at the habits of life of the French workman. We only see him out of doors. He has no home, but simply sleeping apartments. His life is on the Boulevards and in the café. Here he is at his ease, for all class distinctions seem gone. The blouse and broadcloth seem to fraternise over the billiard table and "café au lait," or their bottle of wine. Theatres, singing saloons, and dancing—these things, as in England, have their votaries, and are much indulged in by the French people.

TRADES' ASSOCIATIONS.

There are no trades associations in Paris as in London. Their associations are essentially political, ours only incidentally so. I clearly pointed this out, in an address to the Neapolitan workmen, in March, 1862, written whilst I was secretary to the London Trades Council. Still they have combinations, and manage to plan and act in concert, pretty much as we do here. This was evidenced by the strike of the bronze workers not long since, and by several others not quite so well known to the general public. But it must be confessed that their *Prud'hommes* are of essential service in those conflicts of capital and labour which we so frequently witness in this country. They consist in Paris of four classes: 1st, mixed trades, including the building trades, &c.; 2nd, metals; 3rd, stuffs; 4th, chemicals. Whenever a dispute occurs it is referred first to the "Court of Conciliation," and if not adjusted there, it then goes before the "Court of Arbitration." Only a very moderate percentage of cases ever goes beyond the first court. The sittings of this court are private, but if a case goes for arbitration it is in "open court." Before my visit to Paris I was in favour of these councils, and rejoice in the fact that I rendered all the assistance I could to Lord St. Leonards (by visiting him at Boyle Farm, and going over every clause in his bill, and as officially connected with the trades of London) to get his bill passed. I hope his Act, passed last session, will pave the way to a thorough system of arbitration in this country. Having gone over all the subjects indicated in the "instructions," I add a few general notes in conclusion.

WORKMANSHIP.

The French workmen greatly excel in purely artistic work. In stone carving they are superb. But in solidity, and the general details of plain work, they can learn much of us.

HABITS, &c.

French workmen, in their general bearing and conduct, are gentlemen, whereas English workmen pride themselves upon their brusqueness. I never met with anything but civility and courtesy, amounting to kindness.

PRICES OF BRICKWORK QUOTED.

1st quality, per cubic yard.—Solid masses or foundations, £2 11s. 6d.; walls, any height, £2 12s. 8d.; vaults and arches, £2 14s. 2nd quality:—Foundations, &c., £2 0s. 3d.; walls, £2 1s. 7d.; vaults, £2 2s. 9d. Cheapest work:—Foundations, £1 2s.; walls, £1 3s. 1d.; vaults, &c., £1 11s. 9d. The price of bricks varies according to the locality from whence they come; but this is similar to ours; it simply means quality. We have Suffolk whites, Stafford blues, and Ballington reds; also Stourbridge fire-bricks, &c.

EXAMPLES OF GOOD BRICKWORK IN LONDON.

Bearing out my remarks on brickwork, I refer to the following as examples:—Good plain guage-work: No. 82, Piccadilly, the basement of Bridge-house Hotel, the new Sun Fire Office, at Charing Cross, gateway and piers of one entrance to Greenwich Hospital, and the grand entrance to Hampton-court. Mouldings: 43, St. Martin's-lane (fluted pilasters and cornice), several doorways in King's Bench-walk and other parts of the Temple, and Old Cromwell-house, Hampstead. Machine-moulded bricks: Grosvenor Hotel, and other large hotels, and railway stations, particularly on the London Chatham, and Dover lines. Arches: 14 Southampton-street, Strand, the entrance to the Woking Cemetery station in the Westminster-road; and for groined arches and vaults, the splendid piece of work at the High Level Station at the Crystal Palace.

"Tuck-pointing" and good "trowel-work" do not seem much known in Paris.

BRICKLAYING.

By JOHN JEFFERY.

HAVING arrived in Paris, I was happy to find that the Society of Arts had procured some very learned and energetic gentlemen as guides and interpreters for myself and other artisans who were visiting Paris (by the assistance of the Society of Arts) to report upon the progress of the different trades to which we respectively belong.

By the kind permission of Mons. Haussoulier, who wished to do all he could to enable me to obtain as much knowledge as was possible respecting my own branch, M. Fouché was appointed to show me the different buildings in the Exhibition-park, and any building in Paris I wished to view; and to M. Fouché I am greatly indebted for the information I received respecting the building trades, he having such a thorough knowledge of Paris and of the building operations, and being such an excellent interpreter.

Respecting the quality of brickwork in Paris, there being but very little of it done there, I cannot report at any length. The first I saw was the brick shaft or chimney in the Exhibition-park. The workmanship is very good; but there are many shafts in England far superior to it. I understood it was built by French bricklayers from Rouen. The next was a cottage, containing two bed-rooms, one garret, one living room, entrance-hall, cellar, and w.c.; it is a small structure, but it would accommodate a small family. The exterior walls are 7 in. thick, built with bricks laid on edgeways; the bricks are about the same size as the English stocks which are used in London. They being laid edgeways, leave a cavity in the middle of the wall of two inches. The floors being supported by iron columns, and the roof the same, the walls have very little weight to bear. No doubt it would stand a long time in a place where it was sheltered from the wind. It is a very convenient cottage, and cost the sum of (3,000frs.) £120. The brickwork is very good.

Saw another building, constructed for the ground-floor to serve as a shop, with a bed-room and kitchen, and w.c. There are two floors above the shop, divided into a room to live in, with one bed-room and kitchen, and w.c.; and the building, with three floors, cost (20,000frs.) £800. I saw other cottages, built of wood, at the cost of 2,000 and 3,000frs. Also the church that is built of bricks, a great deal after the English church building style; it is built with yellow bricks, the joints stopped in and tuck-pointed; the buttresses are brickwork, laid battering until it comes straight with the wall at the top; the workmanship very good.

I inquired of M. Fouché if he could show me a brick building in Paris away from the Exhibition; he said he could not, as there was none. He drew my attention to brickwork at the great Market-place; I examined it; it was a few panels built between the irons; it was $4\frac{1}{2}$ in. thick, of different coloured bricks, very inferior to our English brickwork. I looked over the addition now being made to the Emperor's Palace, the Louvre, that is stonework and marble. I went over the building of new opera, now in construction, situated in La Chaussée d'Antin, that is principally built of stone and marble. There are some little pieces of brickwork inside, short party walls, where there is not sufficient room for stone. The bricks are laid very uneven, and the bond of the brickwork very inferior.

I also visited the new railway terminus of the Orleans line, situated near the Bastille; also the new Court of Justice and the Tribunal of Commerce, near Notre Dame, which are more for a mason to report upon; they are magnificent buildings, and many others.

With M. Fouché I visited the concrete houses being built for the Emperor, in the Avenue Daumesnil, the contractor being Mr. Newton, C.E., Chancery-lane. In looking over them I found they are not conveniently constructed. Each house is to accommodate three families, each to have one sitting-room, one bedroom, a kitchen, cellar, and water-closet. A staircase is erected for each three dwellings, and in going up the staircase they will have to pass through the sitting-room and bedroom to get into the kitchen, which is very awkward. Supposing some one was lying ill in the bedroom, and they wanted to carry anything to the kitchen, they must pass through the other two rooms to get into it, which will be a very great evil; and they must pass through the bedroom to get from the kitchen into the living room, the bedroom being in the centre. The bedroom and sitting-room are about the same size as the rooms of an English cottage; the kitchen is very narrow. The estimated cost at first was 6,000frs. (£240), not including water and gas. When several of the dwellings were built, the Emperor came to view them. He saw they looked rough and heavy, and he inquired if something could be done to give them a better appearance, and make them more ornamental; and now they are plastering $1\frac{1}{2}$ inch of plaster of Paris all over the concrete, and drawing it out to imitate stone work. I am given to understand they will cost now 10,000fr. (£400) each house. It is understood that the Emperor will present them to a society of working men; they being some distance from the centre of Paris, they will be let out at a small rental.

I visited a large house being built of concrete, situate in Rue De Miromenil, No. 98. It has 16 windows to each story in front, and has four stories above the ground-floor. The concrete for this house was made in blocks, like stone, and bedded one upon the other with a regular bed; and around the windows and doorways they run the concrete into a mould, to imitate flowers and other devices, similar to stone carving; it has a dull, heavy appearance. It will be very awkward to repair; I cannot see how they can repair it. The building is not admired, nor the system approved of by the French workmen. My opinion is that concrete might do as well as bricks

or stone for a cottage or dwelling-house; for a factory, workshop, or other buildings where iron beams, engine gear, steam-pumps, or other fixtures have to be let in the walls, it would not answer: for where there are holes to cut, or the walls to be molested in any way to fix anything to them, I cannot see how they can be made secure, because when the concrete is once set hard and it is broken, nothing will adhere to it to make it solid and firm like the original.

The men that do the bricklaying in Paris—it being very inferior, and requiring no skill—are called Limousins. They come from an old province, Le Limousin, now the Département Corrèze. Many of them hold plots of land there, and cultivate them. In the spring, when they can work in Paris, they leave their homes and families to look after this land, and go to Paris. Numbers of them go together. They hire rooms and live together, engage a woman to wash, cook, and look after them. They live cheap, being together; it costs them about 2frs. a day, lodging and all included. They work all the time they can, Sundays as other days, and receive wages for a day of ten hours, 4frs. 50c. (4s. 9d.). The labourers' wages are 3frs. There are many young lads, about 15 and 16 years of age, go up from that province, and they are set to lay the bricks and rough stones in the walls. They are not put apprentices to the trade, but catch it from the others who are more experienced. They are not educated when they first come up; there are night-schools which they attend, and receive a very good education, and make great progress. In learning to build walls some become first-class masons (*maçons*). The first class masons' wages are 6frs. per day, and sometimes these young Limousins become the largest contractors. Some take the laying of stones in the walls by the job, and they are called *bardeurs*, and their average wages are 5frs. to 5frs. 50c. (4s. 2d. to 4s. 7d.). The masons, bricklayers, and labourers, when they have no work, congregate together in the morning, about half-past five o'clock, in front of La Place de l'Hotel de Ville (named by the Frenchmen La Grève), and the employers, when they want any men, go there and hire them, generally taking one Limousin and one labourer together. The Limousins are very saving; and when the frost sets in so that they cannot work, they go home with their savings, and remain there until the next year, when the work opens again.

In Paris they adopt the system of co-operation; that is to say, a number of masons take the masonry work of a large building by contract, and a number of carpenters take the carpenters' work, and other trades the same. Each trade keeps its contracts distinct from the others. The money earned by each trade is equally divided among the men of each trade who so co-operate, so each man is his own master, and earns as much as he can. They work Sundays as other days. They have a day of rest except once a month. They are paid once a month—the first Saturday in the month—except when the month commences on Saturday: then the second Saturday in the month. The day after they have received their wages they very seldom work; that is the rest day they have, except when the weather prevents them from working; and that is where us Englishmen stand above them: we keep a Sunday a day of rest every week.

The Paris masons resident there in Paris occupy one room for wife and family. They pay six francs per week for it, and generally board at a café or restaurant. I saw several gatherings of French workmen. They seem happy together, and not one case of intemperance did I see. I find the Limousins (bricklayers) being so few, they have no society or union. There are many fresh ones put to the trade every year. The buildings being stone, they soon become masons. The masons have a society, which is for a mason to report upon. Many other trades have unions or societies. I was glad to find that many strikes are prevented there, as they have a court of arbitration (Le Conseil des Prud'hommes), which consists of an equal number of employers and operatives. When a dispute arises between a workman and employer, the case is taken to the Prud'hommes, and there investigated. Both sides of the dispute are heard, and a verdict given, which satisfies the men, and causes the workmen and employer to work together in harmony. I had the pleasure of being in the Prud'hommes, and heard a case tried.

I should like—and I believe thousands of English workmen would like—to see a Conseil des Prud'hommes in England, similar to the one in Paris, which would prevent those outrages, so painful for us to hear of, now being revealed to the Royal Commission.

PLASTERERS' WORK.

By C. BARTLETT,

PLASTERER.

A PLASTERER, on his first arrival in London, finds that he has much to learn before he can consider himself even a moderately skilful workman in his line. London is, in the great majority of its buildings, a brick-built city, and brickwork in our climate, and especially London, is certain to become dingy from smoke and dust; and where, as is too often the case, the bricks are of bad quality, the damps, fogs, and heavy rains, acting on such bad materials, penetrate into every part of the interior, causing the papering to fade, besides other evils, not the least of which is the fact of the health of the inhabitants being seriously affected. To counteract these evils as much as possible, and for the purpose of decoration, the aid of the plasterer is called into requisition. This causes London to be a "plasterers' country." Nowhere else in England has that branch of industry such a wide and varied field for its exercise; and within the last five-and-twenty years the materials used by the plasterer have been very much improved in quantity and quality. The invention and bringing into use of Portland, Parian, Keene's, and Martin's cements, besides other materials, has greatly enlarged the scope of the plasterer's trade, both for internal and external work, so that in London and its surrounding localities we have a great many first-rate specimens of the plasterer's art, not forgetting the vast amount of very inferior work done for those who cannot, and in many cases will not, pay for a better article.

In Paris the position of the provincial plasterer is changed very much indeed, as compared with London. He may be a tolerably good hand at his trade in some of the provinces; but he comes to Paris, and he loses, so to speak, some of his trade. Instead of miles of brickwork fronts covered with cornice, jamb, architrave, scrolls, and other work, in Portland, mastic, or Roman cements, miles of buildings, six or seven stories in height, meet his gaze, built with a cream-coloured stone—stone, too, be it remarked, of good quality, not throwing off scales, blisters, or crumbling to a speedy decay; stone worked into every form of architectural embellishment, the work of to-day standing beside that which has stood for ages, and bidding fair to be objects of admiration for ages yet to come; but we look in vain for those plastered places we see in and around London: in fact, plastering does not exist in Paris, either as to quality or quantity, as with us. If we turn to the

outlying districts, we shall seek in vain for the speculating building, in six, eight, and ten-roomed houses, made to sell, and which are such a rough nursery for many of our plasterers, but which are, in many cases, the starting-point of some of our best workmen. The fine buildings of Paris, like our own, are not favourable for acquiring that speed and dash which all must get who work in "field work," where the endeavour is made to give up all, or as much as possible, to the plasterer, as soon as the building is sufficiently forward to take the first coat of lime and hair, or the unknown conglomerate that is made to pass as such.

The French architects use plasterers' work sparingly in their first-rate buildings, and in situations where the presence of plastering would not be suspected. For instance, in the new Imperial Library, the coffers, &c., of the arch springing from the gigantic piers in the reading-room or hall are plasterers' work of first-rate quality; but from its great height, and the absence of plasterers' work in other parts of the hall, plasterers' work would not be suspected. Again, in that very beautiful erection, the Church of the Holy Trinity, nearly facing Rue de la Victoire, and close to Rue Clichy, the richly-decorated interior of which being of stone, with the exception of some massive pillars separating the galleries from the body of the church, these alone are of plasterers' work, and among the best plasterers' work in Paris; and those columns or pillars harmonise completely with the colour of the stone work, so that even when close to them you would not take them for other than stone work. First-rate plastering is not the rule in Paris, but the exception; more so than with us. In secular buildings, viz., dwelling-houses, hotels, &c., the plasterer has less to do than with us. The ceilings are not enriched so commonly with mouldings as with us—the painter and artistic decorator superseding all others in making blank spaces agreeable to the eye.

The French artisan has less choice of materials than the English. While the latter has many different cements to work with, the Frenchman has very few indeed, mainly working in that plentiful material plaster (gypsum, or sulphate of lime), the coarse being used for rough floating, and for finishing the plaster is sent through a fine sieve. The plaster setting quickly is a great advantage, as it enables them to finish a room off at once, so that one preparation is enough for, say, one room. With us it is very different, as we have to wait for the drying of the different coats, causing delay, besides keeping more in hand at one time, and finishing nothing right off. The style of work seems rather wasteful to an Englishman. The French plasterer, for good work, makes use of rules, or strips of wood cut thin. These he beds, or "sticks" against the ceiling, walls, or partitions, to serve as guides for the floating-rule with which he floats the walls, &c., straight. This adds to the price of the work the time of the carpenter and the cost of the timber. With us the system is to form our lines or "screeds" with the materials with which we may be working in cornices, whether for internal or external work. Our system and theirs are, with very slight modifications, the same.

EXTERIOR WORK.

This is more often done in plaster than in other materials. It would

not last, perhaps, more than twelve or fourteen years: but in their more genial climate may possibly last thirty or forty. The work is jointed, veined, coloured, or tinted, sometimes painted to imitate stone; in either case the imitation is generally successful. A casual observer would pass by and think it a stone front that he was passing, the idea being helped by the smooth finish of the work, which is not finished with a wooden float, as with us; but is troweled or worked smooth. In cornices, whether inside or out, the Frenchman uses more tools than we do. We use straight-edges, or joint rules of cast steel, with a few small tools; this is all that is required for our intersections or "mitres:" but there (*i.e.*, Paris) the workman uses wooden moulds, made to the shape of the various members of the cornice he is forming, those said moulds being akin to those used by our masons. This takes considerably more time than we are in the habit of spending on such work. In plain work they use fewer tools than we do. The principal tool is a rather broad, thick, triangular trowel. With this he lays or spreads on his material, afterwards using one edge as a drag to scrape down all those parts that may be uneven; the work is then finished with a fine coat worked smooth. They are not so particular as ourselves regarding the colour of their plaster. We look with distrust upon high-coloured plaster, well knowing it sets too quickly to be worked properly, with the grave defect of "giving" or softening after it has been laid on for a few hours. Hawk-boys are unknown in Paris. The men are attended by labourers, who frequently become plasterers themselves. The work executed in Portland and Roman cement calls for no special comment.

PLASTERING IN THE EXPOSITION.

The various erections or buildings in the grounds of the Exposition—for instance, the Temple of Edfon and the various buildings that so thickly abound—were plastered principally by French workmen, and show the same character as other work turned out by the same hands. In the Exposition itself very little of plasterers' work is on view, and that not of first-rate quality.

Class LXV., No. 82, Prussia, Pavillon of massive construction.—The plastering is very deficient in finish, being on a level in that respect with work executed at farm-houses in the Fens of Suffolk. The ornamental portions are roughly finished; a matter to be regretted, as in other respects it is admirably finished.

The display of plasterers' tools is likewise very meagre, and the worst is in the Royal Carriage Department, contributed by England. There is a plastering trowel, of very old date, nearly out of use, and only to be met with in some very odd nooks and corners of old England.

CONDITION OF PLASTERERS IN PARIS.

Very little can be written on the condition of the men in this branch of the building trade; the nature of their employment causes a migration from one locality to another. Like their English brothers, they complain of the exceeding difficulty of obtaining lodgings in a central spot so as to obviate the need of long journeys to and from their work. Most of them reside in the outskirts of the city, the single men in lodgings.

paying for a single room about 15 francs per month for the exclusive use of the same. When two share the same room, they pay two, or mostly three, francs more. The married generally rent two or three rooms, on third or fourth story, at a rental of 250 to 300 francs per year, paid by the quarter. In addition to the preceding, when the rent exceeds 250 francs per year, a tax of 9 francs per year is paid by the tenant.

There are about 1,000 men engaged in the plastering trade of Paris. Many of those coming from the provinces are very indifferent scholars; some few can read, fewer still can read and write. Nearly one-half of the men engaged in the plastering trade attend some school or institution, at the rate of two nights per week. Oftener the men say they cannot attend, having other duties, and it may be pleasures, to attend to. The instruction is free, the schools being supported by a Government grant, and by the donations of private individuals. Often the priest opens a free place of instruction, teaching geometry, drawing, and other branches of education. The two principal educational institutions are the Polytechnic Association and the Philotechnic Association. The strangest thing to English eyes is the busy aspect of Paris on Sunday; building operations are in full activity. When asked, "Why do you work on Sundays?" the answer was, "We lose time in the winter, and therefore must make it up in the summer, or any other time we can; but it is always considered that Sunday is the day when we leave off somewhat earlier than other days." Perhaps the best comment on this is the following:—Many leave off at 12 o'clock on Sunday, and, not an unusual thing, are not at work the next day until ten or twelve o'clock. They take one hour for breakfast, from nine till ten; one hour for dinner, from one till two, in summer. In winter this is somewhat altered. As the days get shorter, breakfast is taken before coming to work, the men making nine hours per day; and, as the light gets shorter, so for a few weeks the men make only eight hours per day.

PAYMENT OF WAGES.

This was done once a fortnight, and in some cases once a month; but everything getting dearer—provisions, house-rent, &c.—there was a general move made by the men for shorter reckonings, and now the practice pretty generally prevails of drawing on account as often as twice a week—viz., Wednesdays and Saturdays—and settling up once a fortnight or three weeks; sometimes once a month.

WAGES OF PLASTERERS.

Sixpence per hour for those men who only do plain work; eightpence for those who run mouldings. The cost of material—such as laths, &c., plaster—is about five per cent. cheaper than in England.

TRADES' UNIONS.

These are not permitted to exist in France. But does the French workman, living so much out of doors, and mixing continually with his fellow-workers, counteract to a certain extent the Government prohibition in relation to trades' unions? The writer of this believes in the

affirmative of this. Benefit societies, for mutual help in sickness, accidents, and death, with those special modifications and requirements which events and circumstances require, are in existence, and, generally speaking, are pretty well supported and attended.

One institution in Paris must on no account be omitted, for it is of great importance in these times of strikes, lockouts, and turnouts. The institution referred to is the Council of Arbitration (*Conseil des Prud'hommes*). There are four districts, divisions, or branches of this association in existence in Paris. One of those branches, from some cause, transacts more business than the other three put together. And no sane man can doubt that these councils do a great deal towards preventing strikes. Still, your reporter found the workmen in the building trade of Paris in a rather unsettled frame of mind. When asked if they did not feel grateful for the efforts made by the Emperor for their benefit, and did they not like him very much? was he very popular among working men? The answer was,—“Not so much as he deserves. He means well, but he is surrounded with those who mislead him; and this they do for their own benefit, and to the injury of us. The Emperor is led to believe that the working man derives a greater benefit from his labor than is in fact the case.” And an ardent wish was expressed, in more than one or two cases, to “fall across the Emperor's path, and to enlighten him on the subject.”

AMUSEMENTS.

The theatre, the public gardens, where vocal and instrumental music are provided, with sight-seeing in its many varied forms, to which must be added the balls patronised by the artisan class; and a ball attended and supported by workmen is a sight once seen never forgotten. It is the only time that you see a Frenchman so excited that an Englishman almost doubts his own eyesight and the sanity of his French brothers, and, truth to add, his French sisters also. But nowhere in Paris do you see drunkenness; for weeks you will not see a single case of drunkenness. On settling days for wages a glass or two may be taken, but a Frenchman has too much self-respect to give way to this vice. The behaviour of the French artisans to strangers and to each other merits our warmest commendation. Nowhere in Paris are you liable to insult; in fact, the self-respect that seems inherent to a Frenchman keeps him from rudeness to others. In conclusion, the writer of these lines will ever remember the kindness and the willingness to assist that was manifested by his French brother wherever he met him: it mattered not whether it was journeyman, foreman, or architect, the conduct was the same; and if the information is meagre, it is from the fact that the branch of industry treated on is very little developed in Paris.

CARPENTERS AND JOINERS' WORK.

BY T. W. HUGHES AND JOHN D. PRIOR.

WE beg to inform you that we have, in accordance with instructions received, visited the Paris Exhibition, for the purpose of examining and reporting on the various specimens of workmanship in connection with our trade which are there exhibited. We find that the quantity of carpenters and joiners' work in the Exhibition is comparatively small, and in the majority of instances presents no distinctive features calling for special notice. Our report will therefore principally consist of observations on French workmanship, and the condition of the French workmen, giving such information with regard to other countries as we have been able to obtain. At the same time, we feel, that, to do justice to our subject, we should require a much more intimate acquaintance with the French workmen than could possibly be acquired during a short visit. With these few introductory remarks, we beg to submit our report for your consideration.

SECTION I.—QUALITY AND CHARACTER OF WORKMANSHIP TURNED OUT BY DIFFERENT NATIONS.

FRANCE.

We find that carpentry is gradually falling into disuse in Paris, in consequence of the substitution of iron for wood in the erection of buildings. Nearly all the houses now in course of construction are being built fire-proof, with iron lintels and girders, the floors being constructed of iron joists filled in with brickwork, with flat roofs of a similar character. Such specimens of carpentry as we have seen have generally been of a very rude description. Their partitions are mostly constructed of cracked and rough scantling, which would be condemned by any mason in this country. Their joists are placed at very irregular intervals, and appear to have been laid at random by labourers, rather than fixed in their proper positions by mechanics. We met with a specimen of this in an unfinished building in the grounds of the Exhibition, where we had an opportunity of inspecting the carpenters' work before it was covered by the plasterer and joiner. Here we found the joists from 20 inches to 24 inches apart. The floors were tongued together; but the way in which they were laid was entirely novel to us, instead of cutting their flooring-boards so as to bring their head-ends to rest on a joist, and securely nailing them, as would be done by

the most reckless speculating builder in this country, their boards were laid down at any length, just as they happened to come to hand, so that the ends of the boards frequently came about halfway between the joists, without any support but that which they received from the slight wooden tongues in their edges. We feel certain that this building, if completed, would be pronounced unsafe by an English architect. It is true that it was only intended for a temporary erection; but the same defects exist in other buildings; whatever the difference may be found is only a question of degree. A lodge of a showy character, erected by M. Haret, some cottages built by the co-operative societies, and other French buildings in the Exhibition-grounds, present no features worthy of particular remark or imitation.

Joiners' work in Paris is, in our opinion, defective in its construction, and roughly finished. French joiners have apparently no idea of wedging up a piece of framing. In framing a room-door with stiles 4 in. or 4½ in. wide, they would not carry their tenons through the stiles, and wedge up the frame, as would be done in this country; but their tenons would go only half way through the stiles, and be fastened with pins. This system of pinning, which is a favourite one with the French, is considered very objectionable in this country, as the head of the pin never fails to project beyond the face of the work as it shrinks. In making sashes and other framing with narrow stiles, in which the tenons are carried through the stiles, we saw no attempt to wedge, but everywhere we found even the best of their work disfigured by the unsightly pin. We met with no mortises more than 3 in. deep. In framing doors, all their rails are made the same width as the stiles; wide middle and bottom rails are unknown. Large doors have frequently two narrow middle rails placed from 6 in. to 9 in. apart. The consequence of such defective construction is that the doors in Paris almost invariably drop on the outside edge. This anyone may observe who will take the trouble of looking along the edges of the rails of a pair of folding-doors in any part of Paris, when in 99 per cent. of them the doors will be found to have dropped from their proper position. In fact, we may say that, under their present system, it is impossible to construct a heavy door, capable of bearing its own weight, and retaining its proper shape with its stiles and rails at right angles, unless braces be introduced to prevent it from racking. This defect seems to have occupied the attention of the French workmen, and, at length, as far as sashes are concerned, it has been overcome. Some genius has discovered that what cannot be managed with wood only, may be made easy with a combination of wood and iron; and now we find that the sashes at the New Opera House are strengthened, and at the same time disfigured, by iron *squares* screwed on the angles.

Narrow rails and pinned framing are not peculiar to France, but appear to be common among most of the continental nations. Much of their small framing in France is mitred and tongued at the angles, instead of being mortised and tenoned. Oak is used for framing in France to a much greater extent than in England. Their work is finished very roughly. This is very apparent in all their public buildings, where one might expect to find good workmanship, if anywhere. And the same

thing is to be seen in the old work at Versailles and in the new hall of the "Conseil des Prad'hommes." This is not to be wondered at when we come to examine the tools with which they work. In this respect they are centuries behind us; and the wonder is, not how it is that their work is so rough, but how they manage to get on as well as they do with the tools they use. No attempt at improvement, we should think, can ever have been made, for we can scarcely conceive of anything much more clumsy than the tools at present in use; the form of which, we imagine, must have been carefully handed down from the days of Charlemagne. Take one tool, for example, the plough. The Englishman uses one handy, light, and strong plough, with eight irons to fit it, and this meets all his requirements. To perform the same class of work, the Frenchman has eight different ploughs, or one to each iron; and the clumsiness of these will be understood by the English workman when we say that the arms are fastened to the plane, and the fence slides on them, so that the arms project on the left hand side of the plane, instead of the right, as with us.

The windows in Paris, from the Palace of the Tuileries down to the humblest dwelling, are all fitted with what are known to us as French carriages; sliding sashes, hung with counterbalancing weights, are apparently unknown. In staircasing, much time and material are unnecessarily expended, as they appear to have no idea of gluing up and veneering a circular string; and their solid strings must require a much greater amount of labour, and are inferior to ours not only in strength, but also in appearance, as so much of the end grain of the wood is visible. One thing we particularly noticed—the absence of anything like a lofty, well-designed shop-front; we could find nothing of the kind in any part of Paris. In many instances we found what appeared in the distance to be noble, commanding shop-fronts, but on a closer inspection we invariably found that the ceiling of the shop crossed the window, so that about two-thirds of the window illuminated the shop, and one-third furnished light to a floor above it.

On the whole, we consider Parisian joiners' work to be far inferior to that done in this country. Their mouldings, as a general rule, are very well designed, and their carving is remarkably well executed. We can easily understand how an art-student may be attracted by the tasteful and artistic appearance of a piece of joiners' work, and may fancy that he sees in it an evidence of the superiority of French work; but the practical workman will arrive at a very different conclusion. He will at once understand that for the portions of the work which are so attractive to the eye the joiner is in no way responsible, since he is neither the designer nor the carver; whilst the framing itself would be found to be very defective, both in strength and finish. French workmen will require better tools, and an entire revolution in their system of working, to enable them to execute a class of work fit for the English market.

BELGIUM.

Of Belgian work, as represented at the Paris Exhibition, we have but little that is favourable to remark. In an oak pulpit and staircase, occupying a commanding position in the building, and valued at 2,500frs.,

there is a quantity of very good carving; but its joiners' work presents all the objectionable features which we have pointed out as characterising French work, with the addition of a few novelties which are peculiarly their own. One of these is to be found in the handrail of the stairs, the lengths of which are united by means of a scarf-joint. We have no very strong objection to a scarf-joint, if properly made, albeit we feel a very decided preference for a good butt-joint, properly dowelled and screwed together; what we particularly object to in this instance is that the scarf is made the wrong way, with the sharp edge of the wood in an upward direction. Now, we know that usually a man grasps a rail firmly to assist him in ascending a staircase, and slides his hand over it in descending. Should any incautious stranger pass his hand quickly down over this rail in the way we have indicated, now that the work has been exposed to the action of the sun and air, he will, in all probability, suddenly find some small splinters of the wood imbedded in his flesh—a sensation which will be more exciting than agreeable. A number of mouldings in the framing have also been cut short, and some of the small pieces which have been glued in, in order to hide the defects, are now falling out from the effects of the heat. A piece of oak framing adjoining it is very defective, as is also an oak chimney-piece and mirror-frame not very far off. Glue may or may not be very expensive in Belgium, but Belgian joiners are certainly very careful of it, if the work exhibited in Paris be anything like a fair specimen: while their work contains too many brads, and exhibits too much of the end grain of the wood to be at all compatible with English ideas of good work.

AMERICA

Exhibits a class of work which is far more like the English, both in the quality of the work and the size of the materials. An American cottage, valued at 2,100frs., is built almost entirely of wood. It is weather-boarded on the outside, lined and papered on the inside, and the roof is covered with shingles. It has a very open, convenient staircase, and a verandah round the building. It is chiefly remarkable as a specimen of what may be done where wood is plenty and other building materials scarce. Notwithstanding the old adage, "There's nothing like leather," we are not prepared to recommend the introduction of houses of this class into this country. Our climate is far too variable for wooden erections, to say nothing of the havoc which a fire would make among a number of buildings constructed of such a combustible material. The entrance-doors of a wood building from Louisiana are very good specimens of joiners' work. The effects of a sea-voyage on them are very apparent, as they must be on all joiners' work which is subjected to a similar test, but they have borne the damps, the change of climate, &c., remarkably well, and although the stiles have shrunk, the shoulders are still close. Another specimen of excellent American joiners' work is to be found in the engineering department, forming a screen for the driver and fireman of a large locomotive engine.

RUSSIA

Exhibits a number of farm buildings, composed of logs roughly square up and framed together, in a way which we understand is very similar

that which is adopted in the backwoods of America, and in other parts where timber is abundant and skilled labour scarce.

Many other buildings are erected by various nations in different parts of the Exhibition-grounds, but in their finished state they call for no special notice. If we could have seen them in course of erection, we might possibly have gleaned many interesting facts in connection with them; but at present, all we can say is that the work is mostly of a very ordinary description, and we are unable to state anything of the condition of the workmen by whom they were erected but what is already well known.

SECTION II.—WAGES AND HOURS OF LABOUR.

The joiners of Paris are paid on a very different system from that which prevails in London. In London the great majority of the workmen are paid at the standard rate of 8d. per hour, the skillful and experienced workman obtaining, as the result of his ability, more constant employment, and a better class of work, in which his physical powers are less severely taxed. In Paris the wages vary from 1½ to 6frs. per day, according to the ability of the workman, or rather according to the amount of confidence in his own ability which he professes, self-confidence being a quality which naturally enhances the value of a man's labours under such circumstances as these. Six francs per day is the largest amount paid to any working joiner, and this is only paid in very exceptional cases. Ten hours generally constitutes a day's work, the working hours being from 7 a.m. to 7 p.m., out of which two hours are allowed for meals. Sunday work is general. The large workshops generally close at noon on Sundays; but at a very large number of the buildings, and in the smaller workshops, the men work all day. A few firms pay fortnightly, but the majority pay once a month, Sunday being generally the pay-day, so that Sunday work often becomes compulsory. As the natural consequence of this state of affairs, for two or three days after the monthly payment of wages takes place, work is almost at a standstill, the men being found in the wineshops, getting rid of all they can spare of their earnings. In this respect, at least, we can hardly say, "they do these better things in France."

SECTION III.—CLOTHING, EDUCATION, HABITS OF LIFE, &c.

The working clothes of the Parisian joiners are apparently very inexpensive: a very few francs must certainly be sufficient to purchase a suit of the blue, coarse, cotton stuff which constitutes their working-dress. A very few of the joiners whom we saw indulged in the luxury of a pair of stockings in the workshop. This blue dress is not only worn in the workshop, but on all ordinary occasions; and in richly-decorated cafés, the workman in his blouse, and his wife in her simple dress and clean white cap, may be seen sitting at their ease; while in an establishment of a similar character in England, the presence of working men and women would be deemed a desecration. Class prejudice does not appear

to be so prevalent in France as in England. In Paris we saw no signs of that arrogant assumption on the one hand, and cringing servility on the other, which are too frequently to be met with in this country. Politeness appears to be natural, even to the lowest class of the French people; and in mixing with those whose position in the social scale is higher than his own, the man in the blouse possesses too much self-respect to become either intrusive or insulting; whilst he who wears the broadcloth carefully avoids anything which might wound the susceptible feelings of his poorer neighbour. On the night of the Fête Napoleon, when all Paris was out of doors to witness the fireworks and illuminations, we walked through most of the principal boulevards and avenues, and we failed to detect any traces of that noisy, quarrelsome drunkenness, or rough horse-play, which is too often to be witnessed on similar occasions at home. In all that vast throng, everyone seemed, in the midst of his own enjoyment, to consider and to respect the feelings and the convenience of others.

The system of education in France, we are told, is very good. In some of the departments as many as 95 per cent. of the population can read and write; and 45 per cent. are educated even in those departments where the greatest amount of ignorance prevails. We carried with us a number of letters of introduction, the addresses of which were in some cases far from legibly written: these we frequently produced in the streets for the purpose of inquiring our way, and we often made unnecessary inquiries in order to test the capabilities of those whom we might meet. In this way we solicited information from many who were apparently among the poorest of the population, and in not a single instance did we find the party accosted unable to decipher the address submitted for his inspection.

The habits of the Parisians seem rather strange to an Englishman. The majority of them appear to live in the streets, to take their meals at the cafés and restaurants, and to spend all their leisure time in the wine-shops, at the billiard-table, in the ball-room, or in some of the places of amusement with which Paris abounds. Beneath this appearance of gaiety, however, much discontent lies hidden; and for this the Government are themselves, to a great extent, responsible, through their capricious and arbitrary treatment of the people. But while oppression may rankle in the breast of the intelligent and thoughtful few, the many trouble themselves but little about such matters in the time of prosperity. Busily engaged in the pursuit of pleasure, their lives pass away in a kind of butterfly existence, until trade, from some cause or other, becomes paralyzed, no work can be found, gaunt poverty stalks forth among the people, the disaffected element begins to spread itself, until at last barricades are erected, the throne becomes endangered, and the streets are deluged with the life-blood of hundreds of French citizens.

Take an English artisan, one of the many who work hard, who spend their few leisure minutes at meal times in scanning intently the news of the day, whose evenings are spent in hard study, or in active endeavours to ameliorate the moral, political, and social condition of their class; take one of these, and place him in Paris, among Parisian workmen; compel him to lead the life they lead; and we venture to predict that, at the end

of six months, life will have become to him a burden, or he will have been rendered unfit for any useful, practical purpose in life. The French people appear to us to be immersed in vain and frivolous pursuits, which hide from them the true purposes of life, to be bound by trammels which they must cast aside ere they can hope to rise to the dignity of a free and independent nation. They want more energy, perseverance, and strength of character; they want to learn that there are aims in life more noble than emptying a wine-bottle or skipping about a dancing-room; to learn that to spend a life in the service of liberty is even more noble than to die for it. When the French people have learnt to govern themselves, they may expect to be governed wisely and well; and, no longer tools in the hands of ambitious rulers, they may build up for themselves, upon a sure and certain foundation, the liberty which some among them have so long and earnestly desired.

SECTION IV.—TRADE COMBINATIONS.

Associations of workmen for the purpose of obtaining an increase of wages or a reduction of working hours (societies of resistance, as they are called) are but of recent origin in Paris. The law formerly most rigorously prohibited anything like a combination among workmen, which was considered a misdemeanour, and its promoters were liable to a term of imprisonment not exceeding five years in duration. A combination of employers for the purpose of unjustly reducing the rate of wages was also punishable, but the penalties were far less severe. At that time the workman was entirely at the mercy of his employer, whose statement in a question affecting wages was believed in a court of justice, while that of the workman was by law held to be worthless. In the year 1829 this law was modified, and the penalties against employers and workmen equalised, but its fundamental principles remained unaltered. At length, however, the Imperial Government took the question into consideration, and the result was that in 1864 the law was amended, so that combination is now legal, except when accompanied with violence, menace, or fraudulent procedure. The joiners of Paris do not appear to have taken advantage of the change in the law, for we could find no traces of a society of resistance existing among them. They have, however, a small co-operative society in Paris, having its workshops at 216, Rue St. Maur, which we visited, and found that they were not in a flourishing condition. The first co-operative society among the joiners was founded in 1831, but it very speedily collapsed. A second society was formed in 1856, but a similar want of success attended it, and the present association, which has been in existence about eighteen months, appears to be just now in rather a languishing state. Its managers complain that they have not met with the co-operation which they expected from other societies of a kindred character.

The last Republican Government appears to have taken a deep interest in the welfare of the working men of France. £120,000 were voted by the Constituent Assembly as a grant to struggling and industrious artisans. An instance of the good feeling manifested by the Government at that time was related to us, and may prove interesting.

Soon after the revolution of 1848, the stone-carvers of Paris found themselves, through the slackness of trade, in very distressed circumstances. A deputation of the workmen waited on the Government, and called their attention to the fact that in the south front of the Louvre, facing the Seine, a quantity of carving was required in order to complete the work. The stone had been for some years fixed ready for the carvers, and they solicited the Government to give orders for its completion, and so afford relief to the starving workmen. The willingness of the Government to accede to the request was expressed; but, said the ministers, "The national finances are at a low ebb; we have no money which we can devote to the payment of the workmen." In order to meet this objection, the workmen replied, "Pay us one franc per day now; on that we will manage to subsist, and we will wait for the balance of our wages until the exchequer is in a more flourishing condition." The next objection was that a separate account would require to be kept of the amount of wages due to each man, and it would cause an endless amount of trouble and complication of accounts. The deputation then suggested that one man out of every ten should be appointed to keep an account of the earnings of the ten, and to arrange all financial matters on their behalf; and for his trouble they offered to allow him a commission of 2½ per cent. on all monies passing through his hands. The application was duly considered by the Government, and the result was that public notice was given that competent stone-carvers could obtain employment on the terms which had been suggested. About 170 responded to the offer, and at the end of the first month they received, not the one franc per day which had been agreed upon, but the full amount of their wages, and the Government themselves paid the percentage due to the men's agents, in addition to their wages. This was continued as long as the work lasted; no misunderstanding whatever occurred, and the Government voluntarily raised the rate of wages as the price of labour in Paris advanced. These facts were communicated to us by one of the artisans who had been employed on the works; and he assured us that the honourable conduct of the Republican Government on that occasion would long be gratefully remembered by the stone-carvers of Paris.

Courts of Arbitration have been established in France for the settlement of disputed trade questions, and have been found to work exceedingly well. An account of their constitution and powers would perhaps be out of place here, but we may say that we believe that all the advantages which have resulted in France from the "Conseil des Prud'hommes" may also be obtained in England, in any district where employers and operatives may agree in the formation of a Council of Conciliation and Arbitration in conformity with the provisions of Lord St. Leonards' Act. The comparative failure which attends the attempts at union among the workmen of Paris may be ascribed to the baneful effects of the system of espionage which is carried to such perfection by the Imperial Government. The mutual confidence, which is an essential element of success, is rendered impossible when the men are never sure that they have not a Government spy in their midst, ready not only to report anything of a political character which may transpire at their meetings, but also to

misconstrue any unguarded expression which may be uttered in the heat of debate. There appears to be at present but little cause for complaint as far as the French law is concerned; the evil is that the law is made subservient to the jealousy or caprice of the authorities. As an example of this, we may instance the policy pursued not long ago with regard to two important trades in Paris. The bronze-workers, being unable by peaceful means to induce their employers to accede to certain demands which were made, resorted to a strike, and subscriptions were raised for support of the men on strike, not only in France, but in England and other countries. The course pursued by the bronze-workers, if it did not secure the approbation of the Government, certainly met with no opposition. The tailors, having also a grievance, adopted a similar plan of action, when active measures were taken by the authorities in order to put an end to their struggle, and the little property which they possessed was confiscated. The co-operative movement is one which has received many marks of the Emperor's approval, yet a few co-operators cannot meet, without the special sanction of the Government, for the discussion of a subject so commendable and so free from everything objectionable as co-operation undoubtedly is. As long as the French Government continues to treat working men with suspicion and distrust, so long, we fear, the workmen will continue isolated from each other, and the spirit of union will fail to take deep root among them.

From what we have seen and heard during our visit, we have been led to the conviction that in our trade we have little or nothing to fear from foreign competition; and if the specimens of work exhibited in the Paris Exhibition may be considered as a fair representation of the workmanship of the various continental nations, we have very little indeed to learn from them. If continental workmen have any advantage over us, it is that they possess a keener appreciation of artistic effect; and this, we think, may be accounted for in the fact that their museums and galleries of art are always open to working men at times when they have leisure and opportunity of visiting them. But our trade affords comparatively little scope for the development of the artistic taste of the workman; such matters belong more to the draughtsman and the carver; but we would especially urge upon the carpenters and joiners of this country to become thoroughly acquainted with the principles of geometry, and their practical application to our own trade, as being of the utmost importance; at the same time, fully acknowledging the necessity of such an education as shall enable the British workman to appreciate all that is beautiful and noble both in nature and art, and shall induce him to strive after a combination of the ornamental and the useful in the objects by which he is surrounded in his daily life.

We cannot conclude our report without gratefully acknowledging the kindness of the many gentlemen who so kindly assisted us in our researches. Especially would we desire to express our gratitude to M. Hansacullier for the kindness and urbanity with which he received us, for the pains which he took in explaining to us any subject which we failed fully to understand, and for the facilities which he afforded us of visiting the various workshops and public works; also to M. Fouché,

who acted as our guide and interpreter in our visits to various places of interest, and to whom we feel ourselves deeply indebted for much valuable and interesting information, especially on the practical working of the "Conseil des Prud'hommes," of which body he is an active and esteemed member. To one and all, we return our sincere and heartfelt thanks for their sympathy and assistance to us during a visit which will ever be remembered by us with feelings of pleasure. And last, but not least, we heartily thank those to whose kindness we are indebted for the facilities which we have enjoyed in visiting the Paris Exhibition.

JOINERS' WORK.

By ALEXANDER KAY,

JOINER.

I endeavouring to give you a report upon Paris and its Exposition, I feel that I am unable to do justice to the mission, and wish, for the sake of the cause, that it had fallen to the lot of some other person of higher attainments and greater abilities, who would have given a better description than I am able to do. But as I deem it is expected of me to give a report on the joiner trade as a workman, not as a literary man, you will not look forward to find eloquent expressions, but plain and simple expressions, belonging to the joinery trade.

Nearly all nations publish their price of materials, the same as Laxton's Builders' Price Book; but some are issued by the government of France; for instance, the price of materials and rates of wages are regulated by the Prefect of the Seine, at his palace, Hotel de Ville, and the book is sold at 12 francs. Therefore, it is clearly evident that you will be better able to obtain correct information from that source than from any statements which I might attempt to set before you.

All nations use machinery more or less in the joinery trade. Mr. Anderson, from the Royal Arsenal, Woolwich, has some time since given such a concise report upon the machinery, that I can add nothing of importance; only a few remarks on a dovetailing machine which arrived there after Mr. Anderson returned to England. It was invented by Samuel Thompson Armstrong, of New York, and patented by him on the 2nd August, 1866. It is constructed of very simple rotary movements, requiring but little space and little power, as it may be easily worked by hand or motive power, and is capable of doing as much work as five men at the least. It is capable of preparing good tenons and mortises in great variety, and at any angle, in the same style that dovetails are made by hand, but being more accurate, therefore making stronger work than if done by hand. It is well adapted to cabinet-makers, packing case-makers, and ship-joinery. It is certainly a great acquisition to the joinery trade. Messrs. Thomas Robinson, engineers and millwrights, Rochdale, have purchased the patent for England.

CHARACTER AND QUALITY OF THE WORK EXHIBITED BY THE DIFFERENT NATIONS.

AMERICA

Will always maintain an elevated position amongst the nations of the earth for good joinery. And it need not be wondered at, when we look

at the vast resources and inexhaustible supply of the materials which form the materials of the joinery trade.

The construction of the drivers' shed on the locomotive engine is a good representation of what the American joiner can do. It is constructed of maple, beech, ash, hickory, and black walnut, well selected, and strongly and neatly fitted together. It is my opinion that British joiners have received some very useful and ready methods from the Americans; and from their superior wood-cutting machines, they must derive great advantages over all other nations. Considering her plentiful supply of easily-worked and beautiful timber, of first-rate quality, I feel thoroughly satisfied that no other nation can compete with America in the production of good joinery, at the same cost, with an equal profit.

The American joiner has several advantages over those of other nations. His tools are second to none, being superior in many instances to British; but the British are not slow to adopt the advantages and improvements brought forward by the Americans: we, however, are supplied with Norway white deal, &c., not so easily worked as the American pine, &c. Therein the Americans have the benefit of the easily-worked timber.

The American joiner's wages are from a dollar and a-half to two dollars per day; and living is considerably cheaper than in England. They go to work at 7 a.m., partaking of breakfast before going to work, thereby showing that the American women are early risers, by preparing a good meal as early as 6 a.m. The food of the American is much the same as British joiners subsist upon, and his clothing about the same also. But as yet the currency is insufficient to supply the means of enterprise, and barter and other modes of payment are adopted by the employers, and have to be accepted by the employés, sometimes to their advantage, and sometimes to their disadvantage; but on the whole, I think it has some good effects, as it sharpens the discerning faculties, and leads persons to make an acquaintance with business. Piece-work in joinery is not frequently adopted in good firms: but they have an excellent system for getting work done, especially adapted in cases of emergency. The employer comes forward to the workmen, and exclaims, "I guess if you will get this piece of workmanship done for me by such an hour, I will give you so much (naming the sum) extra to your wages." And he keeps his word with the employés, leaving the management to one of the best constructors, and he always has his work executed by the time specified that the workmen undertake to have it finished at.

AUSTRIA.

The Empire of Austria is well represented in the joinery trade, by the proprietors of some works in the Heilmühl-gasse, Vienna, who have exhibited five sets of house finishings, one window with fittings complete. The workmanship is good, being strongly and neatly fitted together, and the deal is fairly selected; but the hinges and fastenings are not well made and of ancient style.

There are also four sets of folding-doors, one set being made of deal and varnished, one being of oak, one of mahogany and polished, and one

painted white and gilded, all appearing to be strongly and neatly fitted together, the rails being tenoned, and the stiles mortised and glued and wedged together in a workmanlike manner. The gilt mouldings on the mahogany doors might have been more closely fitted to the door. The lock and fastener were of good design, but not well made by the lock-smith. If made as British locksmiths would make them for a really good job, they would be first-class fasteners.

The Administration of the Forests of the State of Zvirow, Bohemia, exhibits several specimens of building timber, but the beech-wood for the manufacture of tools is excellent, exhibited by Baron Trautenberg, Moer, Hungary.

Messrs. J. Weiss and Son, Margarethen-strasse, Vienna, exhibit a case of good joiners' tools, although in many respects inferior to those made by British toolmakers. The joiner's bench exhibited by them was really good in construction and design, having the back-end of the bench moving with a screw as well as the usual screw and fence in front, which is of great utility in holding the piece of wood in any desired position for the joiner's convenience while he is preparing it for the various articles of joinery. It is specially adapted for amateur joiners.

Messrs. Franz Wertheim and Co., of Vienna, have exhibited a large assortment of joiners' and cabinetmakers' tools, &c., got up specially for the Exposition. They have made some improvements since 1862, when they exhibited a large assortment, but have now borrowed, or rather adopted, without permission, the improvements invented by the British toolmaker. I am informed that they are purchased for the South Kensington Museum. I should recommend the Commissioners to have the small case and its contents placed side by side in the Museum with that Mr. C. Badger exhibited in the Exhibition of 1862, and then it would be seen impartially whether the Austrian or the British workman's tools were the best adapted for the manufacture of joinery. The tools of the Austrian joiner are cheaper than British.

Austria seems to have an excellent supply of the materials for the joinery trade, in the many samples of wood of various kinds exhibited by the various administrations and private firms, viz., planks and sections of good quality of fir, peduncular oak, beech, and maple, veined Hungarian ash, veined walnut-wood.

Education is being extensively diffused. There are 25,000 national elementary schools, and various academies, universities, and institutes. The inhabitants of Lombardo-Venetian and Austrian-proper provinces are the best instructed, the Hungarian and Polish provinces the least. The influence of education is easily seen in the vast number of various articles of manufacture exhibited by the Austrians in London, 1862, and Paris, 1867.

BELGIUM.

I think Belgium is well represented by several good specimens of joinery in deal and oak.

J. H. Goyers, of Louvain, exhibits a monumental pulpit in oak, in the Gothic style; price 25,000fr. The work is well fitted together and properly glued; and the arrangement of the wood is good, and it is

finished on a good system by the joiner, clean from the plane, having had recourse to very little scraping or glass-papery to make his work a brilliant finish.

H. Pickery exhibits a Gothic altar of oak, in the style of the 14th century, and a Madonna in oak, painted in the Gothic style; and from the tastefulness displayed by the workman, I take it for granted that he has felt quite as great an interest in the work as did the employer.

The Society for the Manufacture of large Organs (hand) exhibited two organs fitted up in oak. The smallest one was prepared in their own manufactory, at Ixel-les-Brussels, and is got up in thorough workman style by the Belgian joiner. The largest organ was prepared at Colmar, Haut Rhin. The joinery is far from being so well executed, showing the difference between the joiners of the various provincial towns.

There is also a sideboard exhibited by Peeters-Vierinck, Malines, of excellent workmanship and design. The carvings display a natural grace of a rare class, and are well executed; and the joiner has fitted them so well together, without any stain or blemish in any way whatever, displaying great credit to the Belgian joiner.

EDUCATION.

The joiners of Belgium are in general well educated, as there is an extensive means of obtaining a first-class primary education, thereby opening the intellectual faculties in early youth, and preparing the mind for an extensive sphere of useful knowledge, early adapting themselves to the various industrial pursuits which it is necessary to follow so as to obtain a living, and eradicating that false delicacy and superstition which are the inherent qualities of an uneducated mind. The evidence of this is clearly seen in the architectural beauty of its cities, as there are few European countries which present within the same area so many cities of note and interest to the lovers of antiquities and fine arts as Belgium. Brussels, Bruges, Ghent, Antwerp, Liège, Namur, and Louvain, are all places of historic note and architectural beauty. Crime stands at a low ratio, as the mass of the people possess landed property, and have easy means of subsistence. The noble structure Les Halles, with its immense tower, on which watchmen are stationed day and night to look out for fires, is one of the leading features of Bruges, and contains one of the pleasing chiming of bells for which Belgium is famed.

BAVARIA

Exhibits her forest products with good effect, principally in agricultural implements, tools for the granary, &c., well made, and of wood of superior quality, being so thoroughly free from all defects. There are also displayed specimens of timber for bending purposes, which, being clean and straight in grain, show that Bavaria is well supplied with the materials of joinery.

DENMARK.

J. G. Lund (Copenhagen) exhibits a sideboard and toilet looking-glass, made of ebony, and the borderings round the panels are of tortoise-shell, which is transparent, and the colouring is placed under the tortoise-shell,

which makes it have a beautiful appearance; price, 3,000 francs. Likewise, a side of a drawing-room, 27ft. long, made of cedar, oak, and ebony, well made, and displaying great care and taste in the workman. I think the reason of the work being so well executed is simply this: There is not sufficient work for a cabinet-maker, joiner, or carpenter to give a workman constant employment at the same class of work all the year through: therefore, he is obliged by necessity to adapt himself to any of the other branches of the trade, and there being no society restrictions enables a man to work wherever he may be employed, thus giving a good workman a fair chance of receiving a fair compensation for his talents and ability, and giving to every one an impulse to try and make himself a good workman, as he may freely push himself forward into any department of any trade by the exercise of his own energies, without the fear of being struck against by the other workmen of the same shop.

The ordinary class of workmen receive four francs per day, but they live much cheaper than they could in France, and have several advantages which are of great value to them. They are usually fairly educated, as they are compelled to go to school in early youth by the Government; and if a child is detained at home during school hours by the parents, without a special permission being granted, the parents are fined, and that fine is enforced by Government; and all classes of society are educated together, according to the years of the children, thereby bringing the highest with the lowly in childhood, which makes them respect each other when they grow up to years of discretion, so that a greater familiarity exists between employers and employed.

They have societies like our benefit societies, which a man may join if he chooses, as soon as he becomes a journeyman, if he is a sober, industrious man, and to which he pays 12 francs yearly. If any one is taken ill, he is sent to the hospital; if he does not like to go to the hospital he receives two francs per day and medical attendance; and when he has been a member of the society twenty-five years he is entitled to have his cottage rent paid for him.

Single men's lodgings cost them three francs per week, which includes the entire use of a furnished room, with coffee and bread and butter early in the morning, which makes it evident that the housekeeper wishes early to rest, so as to be able to rise early in the morning.

The societies are protected by Government, and they are compelled to send a statement of their financial position, and any other information required concerning the society, to the mayor of the town to which the society belongs, yearly.

The societies of Austria, Belgium, Holland, Prussia, and Denmark are constructed so much alike (varying only in details of government, not in any essential points), that it is almost unnecessary to make any comments. Some of all nations hold their meetings in cafés; "but they don't go there to drink, as the British joiners do," was the remark of a German carpenter; "we go there to transact business, and have a chat amongst ourselves, &c.; not to drink and smoke, and get tipsy." A bruskard is always kept at a proper distance; no one will associate with him. I find that the influence of education displays itself in a prominent

form, as their minds are imbued with many subjects of interesting conversation, of which the basis has been laid in early youth. When they arrive at years of manhood, it gives them a delight to expand the knowledge they have obtained. Therefore their subjects of conversation are of a different character to the ignorant person who has not had his mind filled with the rudiments of useful knowledge.

PRUSSIA.

G. Van der Hude and J. Hennicke (Berlin) exhibit a massive pavilion in Silesian marble. The oak doors, constructed by Schaer and Reuse (Berlin), are of superior workmanship, being constructed of well-seasoned oak, strongly and neatly put together, the stiles being mortised and the rails tenoned, the tenons and mortises being excellently fitted together and properly glued and wedged; and then the piece of oak is so well selected in colour and figure, and so well fixed to hide the ends of the tenons, making the whole look as if there had been no tenons or mortises used in the construction, and giving that delicacy of finish, leaving nothing to offend the eye, so that, in whatever position it is examined, the eye sees only a beautiful side of figured oak; and the lock and hinges were such as to give the joiner a great impulse to use all his knowledge to make a first-class job of fixing them, which he has really done.

J. C. Lunders (Goerlitz) exhibits a railway-carriage and luggage-van, well made, upon the same style as British workmen put their carriage work together; and the manner in which it is finished convinces me that it was done by joiners who thoroughly knew how to make a good piece of joinery at a moderate cost, it being done with tools adapted to the purpose, and kept in good working order. I take it for granted that there is a good feeling existing between the cabinet-makers and joiners of Prussia (as Schaer and Reuse have constructed the cabinet and joinery work of the pavilion), which has a great influence in producing good workmanship at a reasonable price. The benefits and influences of education are obviously visible in the character and quality of their manufactures. The system of education in Prussia is good, being compulsory, as in Denmark. They have six universities, numerous preparatory schools, 15,000 school teachers, schools in every village, and 24 per cent. of the revenue is devoted to public education.

RUSSIA.

The cabinets and other fittings were made of deal, well selected, and arranged with taste and care by the workmen. There seems to have been an unlimited supply of first-rate quality deal, well seasoned, as nearly all their cabinets, &c., were made of it. The panels, &c., where it was necessary to join two pieces together, were so well selected, that many persons would have thought that it was all one piece of timber, the different variations in the grain of wood being so slight.

The thrashing and winnowing machines were very well constructed by the joiners, and firmly put together, with very little variation from the British system; and the specimens of furniture were well fitted and properly glued. The many specimens of wood exhibited by the various

administrations show that Russia, especially on the side of the Baltic, has an almost inexhaustible supply of the material on which the joiner much depends. The well-selected pine of Finland, free from all knots and defects, is a great encouragement to the joiner to make the quality of his workmanship equal to the quality of the timber; and he seems to have been fully aware that varnished timber is superior in finish where there is no glass-paper used, the avoidance of which not only imparts a finer finish, but is also a greater saving of time and labour, although necessarily compels the workman to be more careful in the execution of his work, and the keeping of his tools in good order. Certainly the pine from the Gulf of Finland is most admirably adapted for any class of timber buildings, whether exposed to the atmosphere or not. I believe it is not generally known, but such is the case, that it costs less for labour, and the price per foot is less than oak, and it is more durable; it endures the test of time much better, as the turpentine protects it when the oak is mouldering into dust.

The Russian cottages of wood erected in the Exposition grounds are well made and simply fitted together, and will not be likely to decay for a good number of years, but I do not think they could be used with advantage in Britain. I say so, as I am well acquainted with a cottage on the Gordon Castle estate, North Britain, built in the Swiss style. It has been built about 50 years, and has required but little expense to keep it in a good state of preservation. It is constructed on the lap principle, with boards laid horizontally, and cut on a diagonal form, fixed to pieces of wood 6in. by 4in., lathed and plastered, the 6in. space between boarding outside and lathing inside being filled with moss or lichen; some are lined with sawdust, either of which prevents damp and cold air from entering the interior, altogether making a very comfortable cottage.

Education is given at the expense of the State. There are 7 universities, 51 gymnasia or provincial head-schools, and district seminaries in every part of Russia.

SPAIN

Is fairly represented in her forest products,—white pine, oak, walnut, lily, lime-tree, &c. The cabinets, &c., for the display of goods were made principally of oak of good quality. The workmanship in joinery was solidly put together, and well finished on the usual system adopted by joiners in the nineteenth century who have adopted progressive advancement.

I hope the bookcase in walnut wood is a fair representation of what the Spanish joiner can do, exhibited by J. Serra-y-Argenter, of Barcelona.

NORWAY

Exhibits little in joinery, but shows that she is rich in the principal materials used by the joiner and carpenter. The joists, planks, and battens exhibited by the Association of the Sawmills of Fredrikstad are all worthy of attention.

A. H. Kjør and Co. exhibit specimens of manufactured and rough timber, very good.

It seemed to me that there must be a great supply of useful timber in the district of Fredrikstad, from the fact that there were seven exhibitors from that quarter.

Bergen, the capital of Norway, has few stone buildings, the houses being chiefly built of wood, except the castle, cathedral, &c. The export duty on timber is 10 to 15 per cent., and the import duty on British joinery is comparatively high, so much so that it is almost prohibited.

SWEDEN.

The beams and planks of the Skoenvik sawmills are certainly well worthy of attention, also those from the Edsvalla sawmills of G. A. Wall, Carlstad, and R. Fisk, Hudilsvall. Their specimens of planks fully confirm the opinion I have always heard, that Swedish timber was superior to Norway.

PORTUGAL.

The cabinets and cases for the display of the various articles of manufacture, and the specimens of joinery done by machinery exhibited in the Exhibition, were very fair joinery, but leave room for great improvement.

Portugal is well supplied with the materials of joinery, as the fir, oak, chesnut, and beech, on the sides of the mountains in the provinces of Catalonia, Navarre, and Arragon, are of fair quality. Although these properly belong to Spain, there ought to be an easy communication. But she has an independent supply in her colonies. The greatest object of industry in wood seemed to be wooden shoes. It seems to me that there must be something wrong internally in Portugal. They seem to have lost that energy which in former years enabled them to compete with other nations.

Education.—The system of imparting knowledge is defective, likewise few opportunities of acquiring knowledge. There is only one university, at Coimbra, founded A.D. 1291, and about 800 elementary schools. I think the religion of Portugal is a great drawback to the development of industry, as it is stated that every fifteenth person belongs to the sacerdotal order. I must therefore come to the conclusion that education would be a greater benefit to Portugal than her religion. There are 480 monasteries and 150 nunneries, and the whole population Roman Catholic.

FRANCE.

The cabinets or cases for the display of the various articles of manufacture are not so well made as those of other nations. The joiners seem to have still retained the style of the fifteenth century. The framing is mortised and tenoned, but not well fitted; instead of properly gluing and wedging, they only pin their framing together, which is a bad system, as the wedging is done on the end of the frame, and is often placed so that the edge is not seen; but the side of the stile through which the pin is driven is always seen, and, as the stile contracts, the end of the pin is left protruding; it takes more time to prepare a pin than it does a wedge, and does not make so strong nor so neat a piece of work. The panels are badly selected, and of second-class oak; the

seems to have been no idea of putting two pieces together so as to appear as one piece: they were also badly got up, the scraper being freely used, and then glass-papured, which makes varnished wood have a mossy appearance. They still retain the natural colour of the oak. The varnish used by the French does not darken the oak as is done by the varnish used in Great Britain. There were some of the cases good joinery, but it was explained to me that they were of British manufacture, having been prepared in London for the display of goods in the Exhibition of 1862 in London, and had been retained and fitted up for the Paris Exposition.

The cabinet and fittings (Class XXIX., Gallery 4,) were from the town of Rheims, and were of superior joinery to that prepared in Paris.

Maylon, Baptiste, and Co. (Toulonse), exhibit a set of door finishing, made of Archangel deal, and varnished. The panels are joined together, two pieces being required to make the width, but were badly selected, the sap-edge being visible in the centre of the panel. The stiles and rails were mortised and tenoned together and pinned, the end of the pin being prominently visible. The architraves are fixed with iron screws, the heads of the screws being all exposed, which gives the piece of joinery a very unpleasant appearance, altogether resembling a piece of very bad joinery. But I do not think the joiner is to blame for the bad system of joinery in France, as the Société des Compagnons Passants Charpentiers exhibit two models of geometrical roof, well designed and neatly fitted together.

There is also another piece of workmanship, designed and executed by the Society—a Temple, for which they received a bronze medal. I think they deserve to have it purchased, as a compensation for their time and the expense they have incurred, which have been paid by the members of the Society. It appears to me that the Society of Carpenters think they are not fairly dealt with in Paris, and they have adopted a convincing method of showing their dissatisfaction. They have displayed great diligence and perseverance, and firmness of purpose, in the erection of the Temple. It is designed in the Corinthian style of architecture, being surrounded on the exterior with Corinthian columns, with filled-in capitals, very neatly carved and carefully and neatly fitted together, the workmanship of all the parts being really good.

F. Richstaedt exhibits a double-fronted bed-room wardrobe and mirror. It is well executed by the joiner, and well deserves the prize medal.

E. Knecht, 45, Rue de Babylone, Paris, exhibits a gun-case, &c., the joinery being good solid work, and well finished.

Model houses for the workmen in the grounds of the Exposition.—The design is capable of great improvement in my opinion. On entering the doorway you pass into the dining-room, 7 ft. by 7 ft. 6 in., through which you have to pass to the kitchen and bed-rooms, 12 ft. by 11 ft. 6 in. and 12 ft. by 11 ft. 6 in., kitchen 6 ft. by 4 ft. The door of the w.c. is within 6 ft. of the kitchen range, and close to the table on which cooking is prepared for the range. A person sleeping in No. 1 bed-room, passing to w.c., has to pass through No. 2 bed-room, through passage-hall, and kitchen: a nice passage for an invalid. The joinery is really third-class throughout, and the construction of the stairs was

faulty, I think, leaving great room for improvement everywhere in the construction of the workman's habitation.

The means of education are ample in France. There are 36,000 elementary schools for boys, 16,000 for girls, 73 normal schools for teachers, 873 boarding-schools, 91 for superior instruction, 322 district high schools, and 41 royal colleges. The government schools of art are free to the students after paying an entrance-fee of 2frs. Roman Catholicism predominates, there being 30,540,920 Roman Catholics, and only 3,000,000 Protestants.

GREAT BRITAIN AND IRELAND.

British joinery holds its place amongst the nations of the world, although she has to import the materials which are the component parts of the joinery trade from America, Russia, Norway, Sweden, Prussia, Spain, Hindostan, Australia, &c.

The cabinets or cases for the display of the various articles of manufactures are made of ebony, oak, mahogany, &c. They are executed in a tasteful style, combined with that solidity which is second to none in the Exposition, and superior to most other countries.

The cabinets of Nottingham, Yorkshire, Huddersfield, &c., display joinery to the credit of the British joiner. They are substantially built, and of superior finish, with little labour.

There is a large framed case for the display of carpets, by a Leeds manufacturer, which is made of a most beautiful piece of oak, nearly resembling chequered maple in figure. It does great credit to the joiner who executed the work. The arrangement of the door, opening either at right hand or left at pleasure, is an acquisition to the joinery trade, and is well suited for hospitals and the rooms of invalids, &c. It is well worthy of attention, as it might be adopted in many places where awing doors are used. Invented by Mr. J. P. Lacey, of Withdean-hall, Brighton.

Messrs. Clerihew and Lascelles, of Bushill-row, Finsbury, exhibit various articles of joinery in the testing-house; sashes and sash frames, doors and finishings, staircase and mouldings, all worked by machinery, being only put together and cleaned up by hand. The mouldings are without glass-paper or scraper: and, from the character and quality of the work, and the prices at which they produce such articles, must convince any French joiner that he is far behind the British joiner, as it convinces me. Persons, when they require joinery work, wrong themselves when they go to foreign countries for joinery, as there is none to excel, and little to equal, our own.

James Lamb, cabinet manufacturer, &c., of Manchester, exhibits a book-case in light oak, inlaid with purple, black, amboyna, and other wood; mounted with polished and engraved brass hinges, lock, &c. in the mediæval style, which ought to convince all practical and intelligent persons what the British joiner can do in library finishing, &c.

BRITISH JOINERS' TOOLS.

E. A. and W. Greenslade, Bristol, exhibit the only case containing a few specimens of joiners' tools. It is a poor representation of the tools

used by British joiners in London and many of the provincial towns. It is likely to do injury to the British joiner in this sense of the question. Another case of joiners' tools, both of French and Austrian manufacture, were got up specially for display in the Exposition (if such *was* the case, which is supposed by all visitors to the Exposition who take an interest in joiners' tools); but the Messrs. Greenslade have made but a poor display. There are many of our British tool-makers able and willing to risk the enterprise of sending a case of tools properly got up, and of a class far superior in utility to the joiner of any nation, but costing the joiner more money than the tools of any other nation, although repaying the British joiner for his outlay, and benefiting the employer by causing a great saving of time and labour, and economy of material. If such was not the case, would the British joiner spend his money, when he could have tools at one-tenth the value? I do not think that there are many joiners who do not require all their wages for the support of themselves and families. I know that there are many who work at all times they have the chance, making tools for their own use, in nineteen instances out of twenty, because they cannot afford to purchase them. But some persons say they can make a good piece of joinery with inexpensively got-up joiners' tools; but to the delicate observant eye the work got up by the indifferent tools has not that brilliancy of finish, and has taken more time and labour to execute it, and is never executed with that taste which is done by the joiner who takes a pleasure in keeping his tools tidy and in good working order. And as the British joiner meets with many varieties of wood, he is obliged to have his tools so constructed as to be easily suited to the difference in quality of the timber, &c.

PRICE LIST OF A FEW OF THE ORDINARY TOOLS USED BY JOINERS.

	British.			Austrian.			French.		
	£	s.	d.	£	s.	d.	£	s.	d.
Jack plane	0	4	6	0	1	10	0	2	8
Tryinez plane	0	6	0	0	3	4	0	3	2
Smoothing plane, 3s. to	1	7	0	0	1	7	0	1	8
Belate plane	0	2	6	0	0	9	0	0	10
Bead plane	0	3	0	0	0	10	0	0	10
Brace	0	7	6	0	1	2	0	1	4
Hand saw	0	6	6	0	2	5	0	2	0
Lock saw	0	0	5	0	0	8	0	0	6
Square	0	3	0	0	0	2	0	0	4

And all others in proportion. I do not know how the Austrian and French tool-makers can subsist, as I am quite sure British tool-makers are far from being a well-paid class of artisans. The foreign tool-makers must be in a very bad plight indeed.

The British joiner's living costs him—a cup of coffee in the early morning, and bread and butter, 2d. Breakfast: tea per pint, 2½d.; coffee per pint, 1½d.; bread and butter, 1½d.; one egg, 1½d.; total, 4½d.; he cannot afford more. Dinner: meat, 6d.; vegetables, 2d.; dessert, 2d.

pint of ale, 3d.; total 1s. 1d. Ten, 4½d.; supper, 8d.; the day's food, 2s. 8d., or 18s. 9d. per week: 5s. for rent, 1s. 6d. for laundress; a week's bare keep being £1 5s. 2d. for a single man; he has not much left for a wife and children, after he has taken for his clothing out of the remainder, and a few tools always wanted.

PARIS BUILDINGS.

At the Palais de Justice, in course of erection, the joinery is being fixed in the style that was constructed in North Britain in the fifteenth and sixteenth centuries. They are making the doors and partition-framing of oak, 1½ inch in thickness; between official rooms and corridors, in many of the principal places, painted.

The first joiner that attracted my attention was a smart-looking and active man, about twenty-five years of age. He was employed fixing iron plates, forming three sides of a square, on the top and bottom of some oak casement sashes, the centre piece being two inches longer than the rails, the two sides of the iron plates being 1ft. 6in. long by 1½in., and sunk level with the rails and styles of the sash, for the purpose of keeping the sash together, and it really wanted it. The frame looked well enough outside, but when I examined the tenons and mortises, they were so badly fitted, that neither glue nor lead would have been of any use, and it had none. His chisels were made like masons' scabbling tools or ship carpenters' caulking irons. He was working very diligently, but the interpreter, M. Fouché, told me he was a blacksmith. He was making little progress, his tools being badly adapted for the work he was executing. I found then that the locksmiths fitted all the locks and hinges on the doors, windows, &c., which in a measure accounted for the insufficient and clumsy nature of their fixing throughout the different buildings in Paris. The locks were all box-locks, and badly made. The hinges were likewise bad, and of ancient design.

The library of the building (Palais de Justice) was fitted up with fittings of oak of good quality. The fixing was bad and unsightly, the heads of the iron screws and nails being all visible. The oak had been scraped and glass-papered where it was to be finished in varnish. The ceiling was artistically designed, being fitted up in panels, the margins and straight-mouldings being constructed of oak, clumsily fitted together, the figured cornices being of papier-mâché, and all painted to resemble oak. The flooring is all laid diagonally, in lengths about 2ft 6in. by 3in. in width, by 1in. in thickness, tongued and grooved and fixed to the joists by a nail being driven through the underside of the groove, a system well-known to the joiners of North Britain. The New Imperial Library is close upon completion; it is well-designed. I think it a masterly piece of architecture, being so well constructed for usefulness and beauty of design, without great decorations or embellishments, and excellently constructed for light, both for sun-light by day and gas-light by night. I was informed that the architect sent his practical designer and draughtsman, but more like a British clerk of works, to the British Museum, to see what improvements he could pick up; and I think he has performed his mission well, to the credit of himself and his employer.

The joinery required for the finishing and fitting up of the Imperial Library is made of oak and American pine. The joiners' work had to be done by the day, and not by contract, as they wanted it well done. The framing, &c., appears to be solidly put together, but has not that brilliant finish that ought to have been imparted if the joiners had used proper smoothing planes, and dispensed with the use of scraper and glass-paper. The fixing was none of the neatest, nails being used and covered over with mastic, like common putty, only a little coloured.

The *Souvenir du Musée des Archives* has likewise been lately finished. The quality of the oak is good, and workmanship fair; but the joiners seemed to have no idea how to repair a defect in the timber, or a blemish, in a proper manner.

Being asked in the British Workman's Hall in the Exposition my opinion of the joinery in the New Imperial Library and Hotel de Ville, while delivering up the special permissions which were given to me and party to obtain admission for us to these noble edifices, I replied truthfully, that they were the best joinery which I had seen in Paris, but were not equal to the joinery in London Government buildings, such as the Houses of Parliament, British Museum, and the new Indian and Foreign Offices in course of erection, neither for solidity of workmanship, nor beauty of finish: for in those buildings all the architraves, &c., were finished without a screw or nail being seen in any way whatever, and well fixed too; such not being the case in their buildings, where the heads were either obviously visible, or punched in and covered with mastic, like British common putty.

The Hotel de Ville is the official residence of the *Préfet de la Seine*. It is elegantly fitted up with theatrical decoration, being beautifully gilded, and the ceilings are of rare paintings in fresco style, the walls being decorated with artificial flowers. The Corinthian columns of papier-mâché, decorated with evergreens, have a very deceiving effect, as they have the appearance of substantiality, which they really are not. The flooring is constructed with many defects, the Brussels carpets being insufficient to keep the foot from detecting the flooring yielding under the pressure. They have made an attempt at introducing mortise locks, but they are of rude construction. The hinges are likewise of rude construction and ancient order, the whole of the joinery being constructed like British theatrical joinery.*

The Palace of the Tuileries has large state apartments, and richly decorated with carvings in oak, beautiful gildings, and several fine frescoes; but there is not displayed that substantiality in the joinery that there is in Windsor Castle state apartments, although larger and more profusely decorated. To my idea, the effect is greatly spoiled by the rude style of fixing which the Parisian joiner has adopted, the nail and screw-head being visible in the elaborate gildings and carvings, and the unsightly box-lock stuck on the outside of the door, and the end of the pin protruding, which takes the place of the wedge in keeping the framing of the door together; and the casements of the windows being so constructed that both sashes must be opened if ventilation is necessary; but they have a first-class

* The writer appears to allude to the temporary portion of the building.—Ed.

sash-fastener and a secure one; as in the ordinary class of sash-fasteners any person from the inside is able to open it, but not so with their style. It is locked with a small lock and key at the bottom, which are almost invisible; so if the housekeeper lock this fastener, no one can have egress from the interior of the room.

The locks and fasteners of all kinds exhibited by M. Vachette, sen., in the Exposition are well made in the style; but I am unable to explain why they do not adopt the mortise lock. I could not find one of French manufacture in the Exposition.

The Palace of the Louvre, being the National Gallery of France, contains a vast number of paintings and several other articles of interest. The rooms are fitted in oak, richly carved; but the beauty is greatly marred by the rude manner in which the joinery is prepared and fixed, being roughly planed, and the heads of screws and nails used in fixing being clearly seen. Being executed in A.D. 1550, it might be said to be ancient; but in my opinion the joinery of France has made no improvement from that date up to the present time. I inquired the reason why they did not adopt improvements. They replied that they kept up the style: but I could not see what neatness of workmanship had to do with style in its purity, as neatness of workmanship, in whatever sphere of trade, only adds elegance to style. On completion of the erection of the grand structure, the Prefect of the Seine ordered a banquet, to which he invited all the workmen who had assisted to raise the noble edifice. Such a mode of procedure on the part of the Government, assisted by the architect, has been money well spent, as it has given the workmen the convincing proof that their interests are respected by the Government. Not only in that circumstance alone, but they make many purchases of articles manufactured by French workmen, although not of that superior style and finish which they would obtain from various foreign manufacturers.

In the building of the Conseil des Prud'hommes the joinery is truly bad, although recently constructed, being made of unseasoned oak, badly joined together by the French joiners. The work does little credit to the workmen or to the contractors, as any person can see through the doors at the mitres of the mouldings, the joinery being far from in character with the masonry; the same being the case in all the other buildings in Paris.

PARIS JOINERY WORKSHOPS.

The joinery manufactory of Messrs. Petit-Jean and Cavet, by the fortifications, on the bank of the Seine, is well supplied with machinery, cheaply got up, but mostly of rude construction, and the work produced is as rude as the machinery. They had several upright saws for cutting ornaments in wood, such as tracery, bracketing, &c., the spring for producing the back motion being made of ash, and constructed as British coach-smiths make springs for carriages, waggons, &c. Their moulding and rebating machine is worked on a vertical motion, with vertical cutters, and executes very rough joinery, the feeding motion being of bad principle, and not keeping the piece of wood steady to the cutters.

They use the hand-saw for tenoning, but, there being no guide in

the workman's hand, make very bad tenons, and nothing to cut the shoulders, the joiner having to do them by hand.

They had a very good mortising machine for making mortises ready-finished, the core being taken clean out and the ends squared, and, with very little ingenuity by the workman, would make the wedge-room at the same time.

The stock of timber was really second-class oak and deal, and the quality of the workmanship did not give me a favourable opinion of the joiners. There were about a dozen joiners at work. They were making casement sashes, &c., of oak and deal. One of the joiners was finishing a casement sash and frame of deal. After planing with his smoothing-plane, he used his scraper and glass-paper. The frame and sash were such as in London are used by speculating builders. I asked the man what length of time was required to make that sash and frame. He replied, "Ah! we have to do the work so much more quickly than you have to do in England." He had been a little over two days, with the use of the machinery, in completing the sash and frame. I was obliged to repress a smile, as any British joiner, if the timber had been cut to size and brought to his bench, would easily complete it in one day, and of superior workmanship, both as to strength and brilliancy of finish, without the aid of machinery, scraper, or glass-paper.

They had a working foreman to about every six workmen. He was lightly at work, wearing cap, trousers, and blouse, being sans necktie, sans shoes, sans stockings. His trousers were made of a material such as is used by British ship-carpenters for jackets to work in, to keep their shirts clean. His tools were like his apparel. He had no hand-saws (only such saws as our firewood-cutters use), and his bench tools were anything but creditable to a good joiner. He told me his wages were six francs per day of ten hours, and the ordinary joiner from four to five francs per day of ten hours. But they usually worked seventy-seven hours per week; that is, seven days of ten hours, and seven hours more. His wages, in English money, were £1 13s. 6d. per week.

M. Havyet, Sen. (Rue de Donai).—The joiners' shops were much superior to those of Messrs. Petit-Jean and Cavet, on the banks of the Seine, and the machinery of a better class, producing better joinery. The principal of these machines was a planing and moulding machine, worked by a horizontal motion, the cutting-knives being also worked horizontally. They were preparing oak mouldings from oak grown upon the Pyrenees. They were far from being well finished, requiring a great amount of hand-labour with scraper and glass-paper, the favourite finishing tools of a French joiner. So much is glass-paper used, that M. Havyet has a machine expressly for cutting the glass-paper for distribution to the workmen. They had an excellent assortment of wooden cramps, being the property of M. Havyet (I visited several minor factories, and found them all to be well supplied with joiners' tools and cramps of all classes, but the property of the employer), the joiners' tools being of a rude and of ancient order. There were several machines for the preparation of flooring. The flooring is laid diagonally, in lengths of about 4 ft. 6 in., the machine marking the tongue and groove, without altering its motion. The machinery was well kept by the machine workman.

The joiners work twelve hours per day for six days, being two hours overtime, and half a day on Sunday, if they choose, but the masters do not compel them to do so. If they work all night, which sometimes happens, they are paid double after ten to six o'clock next morning. In some instances the architects, when they let the contracts, stipulate that the work is not to be carried on during Sunday.

M. Theodore Canrouget, M. Havet's staircase builder, I found to be a very intelligent, industrious workman, and quite open to adopt any improvement. The interpreter told him that I considered the workmanship not good. He got quite offended, and told the interpreter that he would defy any man to make a better job. I had then to explain to him that his hand-work was good, but the system he adopted was expensive, requiring a great quantity of timber, and a greater amount of labour than was actually necessary, and not making so strong a staircase, which seemed to take him by surprise. I endeavoured to explain to him the orthogonal or square-cut system, brought to such a state of perfection by William Perry, staircase builder to Messrs. William Lawrence and Sons, Lambeth, which he seemed to comprehend a little, and desired the interpreter to thank me, and wished me to call on him again. I then endeavoured to show him how to build his string round a cylinder, and to block and glue his steps to make them more solid, which he seemed to see the great benefit of. He has to cut the string for the well-hole for his stairs out of a solid block of timber. The string was 3 in. thick, 11 in. deep, with a scroll of diminutive size attached. He told me that the work was mostly done by the piece; he had eight francs per step, besides the use of the machinery, which I considered was a good price for the work. He conducted me to another workman, who, he said, belonged to the firm. He takes framing work by the piece, and employs other men to help him; he was mitreing oak mouldings, 1 in. by 1½ in.; he had to use a mitre-block, on the system British joiners do for architraves, &c., and adopting the most roundabout system or method, which would not be used by any good joiner. I asked him to show me his best finishing plane; he showed me one costing 2frs., and then introduced the scraper and glass-paper. His other tools were numerous, but were of such rude manufacture, that if any British joiner presented them in any of our British workshops he would be considered as a very indifferent workman.

M. Theodore Canrouget came out of the works with me, and took me to his place of resort, which was a café close by the works, where he treated the interpreter and me to wine, and accepted a *vice versa* from me. I asked if they would object to me coming to work in M. Havet's workshops; he replied that we would not be able to understand each other. I replied, if I learned the French language. O, they would be happy to welcome me, as from the questions I had asked and answer he was sure I was a practical joiner. When they require a rise in wages, they all combine together and go to the employers, and if they think the demands reasonable they are generally granted; if not, they all combine throughout Paris and go to the Préfet de la Seine, Hotel de Ville, to represent their wants to him; he then summonses the employers with forty-eight hours to meet him, and explains the wants of the employe.

The employers represent to him that he must alter the schedule of the price-book; he then makes arrangements for altering the price schedules and sends information to the workmen that they will have their desires on and after the date he is able to alter the price lists, and it is then done with, the workmen seeing that their interests are fairly considered in a proper business manner.

The wages paid by M. Havet to his workmen.—M. Theodore Canrouget, staircase builder, received on day-work 8frs. per day, and made more by piece-work, and had his rent paid and a yearly gratuity of 250frs. I computed his wages to be actually about £2 15s. per week, besides his overtime. He said the other contracting man was nearly the same, and the ordinary workmen averaged 5frs. per day. Living costs them about 2frs. (about 1s. 3d.) per day, and a furnished room 3frs. per week, or 2s. 4d. per week. His attire was clean and neat, and well-suited for the class of work, being a tweed cap, a blouse over his vest, and a pair of drab-coloured cord trousers, and good shoes and stockings, &c., a class of clothing, I consider, far preferable for the comfort of the working joiner to that used by joiners in London. The foreman over all was dressed in a blouse reaching down to his knees, *sans* necktie, a cap, light shoes, and stockings, bustling about with great diligence, the workmen seeming to be quite at home in the establishment. But the effects of the system of piece-work, and the many hours that the workmen are engaged, are clearly seen to be bad, both in the quantity and quality of the joinery produced by the workman. There is evidence of the truth of a motto inscribed in the Kensington Museum, "How can a man, who is continually following the plough, acquire knowledge; knowledge cometh by leisure;" and that knowledge is powerful, no sensible man can deny, and every thorough business man will acknowledge.

On entering the British Workman's Hall in the Exposition, after visiting the joinery manufactories of Messrs. Petit-Jean and Cavet, and M. Havet, I was asked by a Frenchman—"Did I not think that M. Havet could produce better joinery for the British commission, at a less cost, than any of the London manufacturers could." Wishing to avoid giving offence, I had recourse to the anecdote of the broom-makers. The one asked the other how it was that he was able to sell his brooms cheaper than he, when he stole the materials of which they were made. "Ah," replied the other, "opposition is the life of trade; I steal mine ready made." M. Havet must be like the latter. The meaning was fully comprehended, and afforded a little amusement. I should like very much that the British commission would take a piece of joinery of the same class, and give it to four joinery manufacturers, two in London and two in Paris, say Messrs. Geo. Smith and Co., Messrs. Trollope and Sons, Messrs. Petit-Jean and Cavet, and M. Havet; and carefully note all the circumstances, such as time required in all the departments, the quality and finish of the work as it leaves the machines and the joiner's bench. If done impartially, I have no doubt that they will agree with me in thinking that they unjustly affix (in the eyes of Frenchmen) an merited disgrace on the employers and the joiners of Great Britain. I am well aware that the joiners of Great Britain could produce, with the same ease and more comfort to themselves, a far greater

quantity of joinery than they do, and are willing to do, if they were civilly and fairly treated by the employers, as is the case with American, French, and, in some instances, with British joiners. In America, when any piece of workmanship is wanted before the usual time required to finish it, the men are promised so much extra if they finish it by such a time. It is done, and often cheaper than it would have cost at the usual day wages. It always answers well where this is done, even in Great Britain. It is always adopted at one of our large paper manufactories: whenever they want any extra work done, often by night, besides paying extra wages, they supply plenty of refreshments, in the shape of bread and cheese, bread and meat, and two pints of ale to each man. I have seen Messrs. Vernon and Sons, of Liverpool, get more work done for a pint of beer than they would have done if they had offered a day's wages extra; and some of the London small employers often remark that by giving a little refreshment to a workman when he is at work, he gets more work done than he would do for a shilling, and the workman appreciates the employer's act of kindness, and he will do the work allotted to him in a proper workman-like manner, in nineteen cases out of every twenty.

I may give an instance. The preparation of the quadrangle in the new Indian Office, for the Sultan's fête, was a work of great interest to the workmen as well as those who had the management. It was well arranged, and executed by the managers and the workmen in a short space of time; but I know that had a slight measure of refreshment been meted out to the workmen, especially to those who were labouring on their knees, planing the ball-room floor, with the promise of a reward if they were done by a certain hour, it would have been done several hours earlier than it was. And I am sure the noble Lords would have enjoyed the fête equally well, if this had been done. When they left work for half-an-hour, at ten o'clock p.m., to get some refreshments at the ale-house, &c., many of them had no money to purchase anything with, and returned to work to midnight without having tasted a morsel from 5.30 p.m., and some from noon; and on the night of the entertainment, more than one hundred joiners alone worked from noonday to 10 p.m. without having eaten or tasted a morsel of bread or drunk a cup of tea, and then were grumbled at by some persons who know not how hard they had worked, and then hustled out of the building by a police-officer. I do not think that that is the way to manage the British joiner. I am sure that the British joiners will never be ruled by coercion, neither directly nor indirectly; but I feel assured, if the British Chief Commissioner of Works was to act as the Préfet of the Seine did on the completion of the edifice of the Louvre, I think I am right in saying that £1,000 spent as he would have the influence of adding far more to the wealth of Great Britain than all the £20,000 which was said to have been spent on the Sultan's fête, of which every British workman is proud to speak displaying Britain's glory, unequalled by any other nation of the world.

In the course of the erection of Charing-cross Railway-bridge gentleman remarked to one of the carpenters how wonderful that they were able to raise the beams of iron of so great weight, and to place

them in their respective positions. "Ah!" replied the carpenter, "only tell us, sir, where to get the money for doing it, and we will soon place it on the top of St. Paul's." There was a great force of truth in the remark. There is plenty of talent in the populace of Great Britain; and if it was properly cultivated and nourished, there would be no nation to surpass the British in industry; and Brother Jonathan would have to bestir himself to keep pace in the march of industry.

Another point is that if the capitalist would look direct to his own interest, he would see that for every £100 worth of joinery he sends to be manufactured in a foreign land he is sending a British joiner to the workhouse, and he has to maintain him, although indirectly. Why is it that Britain cannot do without workhouses and France can? Why have we not a Council of Conciliation, as France has? Why is it that Britons enjoy the Sabbath, and in many instances keep it as a day set apart for worshipping God, and France does not generally? On seeing the vast concourse of people enjoying themselves at the fêtes of St. Cloud, on the evening of Sunday, 22nd September, 1867, and looking so happy, I could not entertain the idea that those noble living mortals were all to be lost simply because they do not worship God in churches, as Britons do. But should Britons spend the Sabbath as Frenchmen do? I say, God forbid! and ask every Briton to do whatever lies in his power to enable the French populace to have a whole Sabbath to worship God, as God may guide the dictates of his conscience so to do. It will be a treasure of incalculable value to the population of France, and will be a great propeller to the march of industry, in which they are making rapid strides.

TRADE SOCIETIES OF JOINERS AND CARPENTERS IN FRANCE.

There are in Paris five societies; two of them are nearly like the British unions or amalgamations. They are the exhibitors of the two buildings in the Exposition which I have before mentioned. They have branches in the most important towns in France. Their aim is to find employment for their members; and their occupation was, when travelling on foot in France, to fight with the fellows of other societies they happened to meet on the roads. Thanks to the railways, these opportunities of men handling each other are now very rare. One of these associations, which may be termed "the travelling fellows," numbers in Paris about 2,000; the second, "the liberty men," about 1,200. To save the right of existence they are constituted as benefit societies. Their members deeply regret the fanaticism and abuses of times past, but are always enemies to the opposite association. A man to be a member of either must be a bachelor; as soon as he marries, he is excluded from the fellowship of the society, without any compensation.

Two other societies are benefit societies, numbering in the whole 500 members living in Paris; each member pays 2fr. per month contribution to the society. In case of being sick or wounded, he receives 2fr. per y. Nothing is paid when out of work; but as they are all picked out they are well known, and are almost always busily employed and paid.

The last, the fifth, is also a benefit society. It is composed princi-

pally of young men who do not wish to interfere with the other societies, which so closely resemble our trade unions. This society is to be found in all the principal cities of France,—such as Rouen, Lyons, Bordeaux, Nantes, Marseilles, &c. : and whenever a member wishes to travel, he is protected by the same laws as the others that are protected by the Government of the country, and is admitted into the other societies as a local fellow, and enjoys the same rights and advantages. If he pay 2fr. per month, he receives his 2fr. per day if he is sick or wounded. They take lessons in drawing, in schools supported at the expense of these societies, particularly in the winter-time, in the evening. Their meetings of the members are generally held in their school-rooms, not in guild-houses; and I was informed that they had received valuable counsel and assistance from members following the profession of the law (known in this country as solicitors), enabling them to work without infringing the laws of the country, so that they never commit themselves so as to be punishable by law.

THE CONSEIL DES PRUD'HOMMES

Was originated and established A.D. 1673, for the settlement of trade disputes by men elected by the practical tradesmen from amongst themselves. In the upper court, termed the Chamber of Commerce, they have two large paintings, one representing "La Promulgation de l'Ordonnance du Commerce," and the other "L'Institution des Juges et Conseils."

The modes of procedure adopted by the Conseil des Prud'hommes, when a difference of opinion arises between persons following an industrial profession or occupation, is this:—The person who considers himself the injured party proceeds to the Council of Conciliation, and represents his supposed wrongs, when he pays threepence. A summons is then issued to the defendant, when both have to make their appearance at the Council of Conciliation. The time allowed is usually a day or two; often there is only one day (no more) between the issuing of the summons and the appearance. If the parties do not agree at the Council of Conciliation, which is sometimes the case (although nine cases out of every ten are settled there), the plaintiff pays into court 2fr., and they are both summoned to the judgment-hall, but they may appear and have their case examined by a councillor at their option. This appearance is not compulsory, but is recommended, and usually takes place the week after the attempt at conciliation, when each is ready to read his statement, frequently on the morning of the day on which the judgment has to be pronounced, which is the first Wednesday after the attempt at conciliation.

When the parties appear in the judgment-hall, they find ten members of the Conseil des Prud'hommes seated on a raised platform, the president sitting in the centre, when they courteously and with great familiarity hear the statements each has to make. In some cases the matter is so clear and evident that the judges give their verdict without rising, or give the injured party a slip of paper to take to the officer who is appointed to carry the sentence into execution. But the case may require some consideration; the ten judges then rise and retire to an adjoining

room, and then they compare the facts of the case, and decide on judgment. That judgment may not be final; the one who deems himself the injured party may appeal to the Chamber of Commerce; but, before his case is entertained there, he must deposit 400 francs, to pay the expenses, and the case is often not worth half that amount. So the fact is, that before he deposits so large a sum as that, he often decides to go no further with the case. Sometimes in cases between employers and employés (piece-work being so much adopted), when the employé presents his bill, the employer may say, "It is too much, you must make an abatement;" the employé may say, "No." The judges do not settle a case like that at first. They send a practical man to examine the work in its different classes, at various prices stated in the price-book issued by the Prefect of the Seine, and the judgment is given accordingly. There is another tariff-book used between employers and employés, but it is not legal. It only costs three francs, and the one issued by the Prefect of the Seine costs twelve francs.

Judgment is enforced in all cases in from ten to thirty days; but there is a curious fact connected with the enforcement of the claims of the judgment, although nevertheless true. The Government will give the convicted party six months' credit of the court expenses; the court pays the witnesses, &c.; and if the defaulter is not able to pay the costs at once, they will take it in weekly or monthly payments; and the officer appointed for that purpose looks after it, and sees that it is paid, and if he is put to any trouble, adds to the cost.

There is another question, or rather a fact, of great importance, which has a very beneficial effect on trade in general. They punish a fraudulent trader with that rigour which almost always prevents him from a repetition of his crime. If he is found to use unjust weights or measures he is fined, and has to affix, in some prominent part of his premises, a placard for the space of twelve months, mentioning what he was fined for, and the date. They acknowledge a failure (that is like a British compromise), but not a bankruptcy; once a bankrupt, he is not allowed to enter into business again on his own account.

When the Prefect of the Seine issues a schedule for contracts, he lets the contracting party know that he must make an abatement of so much per cent. from his builders' price list. Who is benefited by this abatement?

AMUSEMENTS OF THE FRENCH WORKMEN.

Their chief amusement is dancing; any one who wishes to see the French men and women enjoy themselves, must go and see them dance, which they do with great vigour. The next is the theatres, which are highly appreciated by the workpeople, and greatly patronised. Music saloons are likewise well appreciated; there are several first-class ones in the Champs Elysées. Out-door amusements are well patronised, such as the roundabouts, with two, three, and four horses abreast, where you will see the aged and the young of all classes paying their penny to be allowed to be carried round the arena a few times on horseback, which they seem much to enjoy.

The fêtes at St. Cloud were held on one of the Sunday mornings in

September, including all that pertains to harmless amusements. There is a long avenue of stalls, displaying confectionery, crockery-ware, cheap jewellery, wheels of fortune, ball-playing (nearly like skittles), shooting-galleries, and stalls for musical instruments, where are to be seen grown-up men and women purchasing instruments, in shape resembling large humming-tops, with a reed in the mouthpiece, which produces a sound like a gong when blown against; and striped staves, from two feet to seven feet in length. To see young ladies, grown up to womanhood, marching along with these decorated sticks, sounding these gongs, and looking so happy, an Englishman would say they had taken French leave of their senses. But such is not the case; they seem to take the greatest delight in making each other cheerful with trifles. There are, besides, horse roundabouts; and those riding have a kind of weapon, with which to carry away one of the rings attached to a sliding-board affixed to a stand. It is the aim of the person to carry away one of these rings on his weapon, as he is sped round on horseback at a rapid rate. There are little carriages for those who are too timid to trust themselves on horseback. The conductor, as soon as he observes a child mounted whom he considers unable to retain his seat in a proper manner, at once proceeds to adjust a leather strap around the child's waist, and, fixing it properly to the iron rod which carries the horse, secures the child from being dismounted during the performance. I saw some of the British visitors enjoying a ride round on these horses, and only finding fault that they had so few times for their penny.

Next came the Lilliputian railway, running round an area of forty or fifty feet in diameter; then there were swing-boats and swing-seats, which seemed to be well patronised; there were theatres, performing monkeys and goats, dancing saloons, &c.; but no gin-palaces. The fountains playing at the same time gave to the whole scene a very entire appearance, and every one looking so happy really was pleasant to see. There seemed to be a want of conveyances to and from Paris. The railway carriages could have been filled if there had been twice the number of them on the route; and, strange to say, there was not an inebriated person to be seen amongst the whole vast assemblage, and, although all these persons were in their glory at twelve at night, by one a.m. a cannon-ball might have been fired along any avenue, rue, or boulevard, without coming in contact with any person, except a few engine-drivers or stokers wending their way to or from their employment. All the streets were entirely deserted, only the solitary sentinel on duty to be seen; not a police-officer to be seen, and no vagrants lying on the seats; every place being so still, except the thoroughfares leading to the Halles Centrales, which is the largest market in Paris, principally for fruit, flowers, vegetables, and meat, all of which they display in great quantity and of good quality. It is a sight worth going to see about 7 a.m.; the mechanics' wives, &c., are to be seen returning from market with their basket in their hand, containing the day's provisions, &c. They all wear white crimped caps, and their dresses are short (and assistant scavengers), it being considered very untidy to wear long dresses in public. I saw an Englishwoman in the Palace of the Louvre in the picture gallery, where there were clean oak floors, trailing

dress amongst the dust. I quite easily observed the French females looking on her with disdain. This is another advantage the French joiner has: his wife costs him little for dress, as the dress wears longer when it is not trailed in the mud. They are not ashamed to show their feet and ankles in a proper manner, and, being early risers, do the work of their sphere in proper time, not stopping up to a late hour, muddling by artificial light, and sleeping away the light of day. Another evil a Frenchman avoids: it is a very rare occurrence for a French lady to have more than a couple of children, and these she sends to the country, to be reared until they become able to do for themselves; and the French ladies are all interested in some business, or other mode of industry, whereby they add greatly to the comforts of home, and the health and pleasure of all around them. I think the French ladies are more industrious than the gentlemen.

There seem to be no smoky chimnies, and where the smoke goes to is a mystery to me; at all events, the atmosphere of Paris is beautifully clear. They have no drizzling rain there; if it rains it does so very hard, pouring down in great quantities for the short space the storm continues, frequently intermingled with lightning and thunder.

THE LIVING OF THE FRENCH JOINER.

Usually he partakes of coffee and bread and butter in the early morning, from 5 a.m. to 6 a.m.; from 9 to 10 he takes breakfast; his breakfast may be bouillon, beef steak, vegetables, "une demi-bouteille de vin" et pain, in all 1fr.; or bouillon and une demi-bouteille de vin et pain, 30 centimes. Dinner—Bouillon, veal, and tomato sauce, mashed potatoes, oseille, boiled cream, half-pint of wine, 1fr. 20c. Supper similar. Tea is very little used, only when a person is ill. The wine is by far the most wholesome, and keeps the stomach better, and is cheaper than tea. In most places they serve the customer with table-napkins, for which they charge 10c.: but many a French joiner dines for 70c. Some prefer bread, soup, and meat for breakfast. I observed beautiful potatoes cooked at 15c. (1½d.) the kilo in one of the streets. Many a French workman dines there on a basin of soup—whether made of frogs or not, it is really good, far superior to the mess of stuff used in London as soup in the workmen's dining-halls—with vegetables, bread, and about a half-pint of wine, and this is found to support the frame well; the air being so pure they require little animal food, just as the British rural population do; and see how healthy and strong they are; besides, the populace of large British towns, where the atmosphere is surcharged with carbon from the chimney, requires a greater amount of animal food to support life.

TRADE ASSOCIATIONS.

As to British trade associations in joinery and the building trade generally, and the influences affecting the trade throughout, I think the building trade of Great Britain at the present date is rather at a low ebb; but I hope to be able to show that the evil does not exist where it is generally supposed to emanate from. The blame is always attributed to the working artisan; I say, on the contrary, the artisans of Great Britain are the

mines from which the wealth of the country is derived. Work these mines with economy and care, as the horticulturist would his orchard, where he had planted his trees from which he expected to gather golden apples; he would not inflict wounds on the root, stem, and branches of his trees, nor would he shut them up in darkness; he would nourish them at the very roots, and expose them to the brightening influences of the noon-day sun, nor would he send the means of nourishment to a foreign land, to be used as a nourishment for the trees of that land, in the vain hope that he would obtain golden apples from thence.

Trade unions, if properly conducted, will be to the advantage of the capitalist as well as of the workman, because unity is strength in all spheres. I think the trade societies of Britain might derive many benefits and eradicate some of their evils by adopting some of the features of the trade unions of France, and altering two or three features of their government. I do not mean that they should adopt the exclusion of married persons, as is done in France, without any compensation, but I think it ought to be the same to the married as to the single, if he only pays the same subscription.

I do not think that the female portion of the community should be included in a separate clause, as is the case with some benefit societies who make provision for the interment of two wives. I advocate impartiality. I mean let there be no benefits but those which are available to all classes of the fraternity. The bachelor cannot avail himself of the benefit of a sum for the burying of one wife. Another bad plan is to pay men a weekly sum when out of employment; but it is seldom the good workman is out of work; it is usually the idle and careless man that is discharged first, and he then places himself on the benefits of the society, from which the man in work derives no benefit. The societies of France pay nothing to their members when out of work, but yet they exert themselves to find employment for the unemployed. Another benefit, which I am afraid is often misused, is the paying for tools of trifling value which are supposed to be stolen. Having lost a few things some few months ago, on inquiring about them, and stating the supposed cause of the loss, a labourer told me it did not signify, as the society would pay me the value of them; it was no loss to me, the loss was only to the common fund; and, by the expression of his countenance, he said it was no sin to take them.

I now come to what I think is the grand evil; that is, the holding of the meetings of the members in gin-palaces. The members of the societies of carpenters in France know that the system of education is not adapted to the requirements of their trade. They therefore maintain schools at the expense of the society, where the artisan may study in the evenings, free from any charge. They likewise hold their meetings in these school-rooms, and conduct the proceedings of the society in a more beneficial manner than they used to do in the cafés, and the members say at a less expense. They do not object to any one going to the café after business is done, although drunkenness is abhorred, and the drunken member is quickly sent to Coventry. I do firmly believe that there would be great advantages derived from such measures, as education would clear and refresh the intellect in a manner

quite different from the associations of the gin palace. I am aware that there might be some evils arising from adopting such a mode of procedure, such as the loss of the fellowship of those who would still adhere to the associations of the gin-palace; but the good derived by the anti-gin-palace associates would greatly counterbalance the evil effects. These schools, properly conducted, would be of incalculable value to the rising generation of artisans, as the father would find a pleasure in taking his sons and daughters to school, different to taking them to the beer-shop. I know some will say that that would prove to be opportunities for immorality. There might be a few instances, but they would be rare, and it would check the immorality at present existing, as that is the great theme of conversation in the uneducated circles of the British population. I maintain that the mind filled with various classes of knowledge is far less likely to revert to animal inclinations, because of the fact that it has other channels of thought to attract its attention. Besides, this would tend to bring the various classes of society together, for I have no doubt that employers would gladly intermix in such associations, and this would help to enlighten the employers, and to keep down the presumption of insignificant and ignorant workmen, who go about making orations and advancing statements which are injurious to the interests both of the capitalist and the workman; as these statements cause argument and controversy, which men of all classes will indulge in, not only in leisure hours, but also in business hours, whenever an opportunity offers, wasting the time that ought to produce some article of value. Time spent in these arguments is, in nineteen cases out of every twenty, like so much water spilt on the ground, that cannot be gathered up again.

A few weeks ago a manager of works was escorting a gentleman over the works of which he had the superintendence. They abruptly came on several of the workmen talking together. The gentleman turned round and looked at them. The remark of the manager was overheard by another workman, and which all acknowledge to be a truth:—"That gentleman, sir, there is the grand evil of the present date—too much talking." I have often been told by employers and capitalists that workmen are now better paid than in former years, and yet they are a worse class of workmen, as they can scarcely go round any part of their works but they find the men together talking. In few instances do they accuse the workman of laziness, but of spending his time differently to what he is paid for by them. What, then, is the cause of all this evil? I believe it is the want of education. An education on sound principles would greatly remedy the existing evil, for it is an undisputed fact that the well-educated workman is generally the least talkative. But there are many instances where the educated man's voice is heard where it would not be were it not for the assertions made by men who have not had a sound basis of education instilled into their minds in early youth, and so misunderstand the statements advanced in the reading of cheap literature to which the workman has recourse; and in his ignorance he is not able to judge of the erroneous statements which are put forward by those writers who write for their own personal benefit. And likewise I find that education greatly assists the workman

in the execution of his duty, in adopting the speediest and best methods for the construction of his work, both as to time and quality. The educated workman always returns the greatest value to the employer, especially if he is an anti-associate of the gin-palace. But there are many employers who do not think so. The fact is, that class of employers are sometimes more ignorant than the workmen.

I think it high time for the British to adopt the plan of that extraordinary man, Napoleon I., with regard to the laws affecting the building trade. On his accession to the throne of France he found the laws of France to be most defective, and he chose a number of young men, and set them to make a code of simple, just laws, and instilled into their minds that the simpler the laws they framed suited for the administration of justice, the greater would be their reward; and he locked up the old laws, and issued the Code Napoleon, which these young men of integrity framed, under which the building trade of France is prospering. Therefore they are able to build a city worthy of a great nation, and to make great advancements in the march of arts, commerce, and manufactures.

MASONRY, &c.

By GEORGE BROUGHTON FORBES AND JOHN McEWEN.

HAVING been sent to Paris by your Society, we have the honour to report as regards our special trade as masons. We may state that on arriving in Paris we found our way to the Place Rapp, which is close to the Exhibition. This is a square of buildings, fitted up for the accommodation of artizans. We made the *logements* our home, thanks to Mr. Layard's committee for the admirable arrangements that they had made for our accommodation and comfort. Next morning, after looking over the plan of Paris, we found our way to the Triumphal Arch; we were struck with the grandeur of the design and beautiful carved work; the masonry work well executed, and all of the best and hardest kind of stone, of good colour.

We got to the top by a stair of two-hundred and seventy-three steps, seven inches rise; the space of the top of the arch is about sixty yards by thirty; from here we had a fine bird's-eye view of the city.

We counted twelve streets radiating from this arch, running in every direction for miles, in straight lines; some of the streets seven miles in length. Came down from the arch; took a general survey of the city; found it a complete city of palaces; what with its wide streets, lofty buildings, adorned with sculpture, carvings, fountains, gardens, and trees in every direction. We could call it by no other name, not forgetting the Seine, with its fine bridges; the fact is, our palaces in England cannot be compared to the police and soldiers' barracks of Paris; they even far surpass for design any of our palaces in England, so far as the outside appearance shows, and all built of beautiful white stone.

Went home to our *logements* with a good deal of pleasure from what we had seen of the city. Next morning got a weekly ticket for the Great Exhibition; took a survey of the building, which is not very imposing; covers about thirty-five acres of ground, and far surpasses any of our exhibition buildings that we have had here for the arrangement displayed. Called at the British Workman's Hall, shewed our cards to M. Haussoullier, and were kindly received. He furnished us with a guide, in the person of M. F. Fouché, a stone and wood carver, and member of council for the Court of Arbitration; we found in him every assistance that we required, for which we return our sincere thanks. He took us to the New Opera House; this building has been in hand for about six years, and does not appear near completion; this will be

one of the noblest buildings in Paris, when completed; its magnitude is beyond anything that we have yet seen; it is adorned with about thirty large statues, groups of figures, busts, marble columns of every colour from various countries; white, rose, green, red, and violet stone columns, measuring twenty-eight feet six inches in height and three and a-half feet in diameter, in one stone.

We were told by our guide that, during the overflowing of the Seine, water burst into the foundations and threatened destruction to the building; however, pumps were set to work, night and day, and saved it.

We next visited the new law courts. In the entrance-hall to the above courts there is a grand staircase, worthy the notice of all connected with building, the steps of the said stair being 7ft. 6in. out of wall, 1½ in. in wall, supported by a string that forms an arch, and receives a baluster with hand-rail; 26 steps to stair, quarter spaces; the entire cost of hall and stair, £4,000; all executed from a superior hard stone. We found this one of the best finished jobs in the city. We were told that it was worked by the day; the architect would not have it done by contract. We found the masons here at this job very polite and civil, so we put several questions to them regarding their trade associations. They told us that they had meeting-houses in the city, and all strangers have to apply there for employment. Their first inquiry is as to character, and what they can do as to their trade; so they are sent to shops suited to their class. The masons here do not object to work along with men who do not belong to their society. We did not hear of any strikes having been with the masons. All the differences that may arise between masters and men are settled by the Court of Arbitration. The court is composed of an equal number of masters and men. They all bow to the decision of the court.

Masons' wages are from 6d. to 8d. per hour in the city. There are three classes of workmen: roughers at 7d., fixers at 6d., finishers at 8d. per hour. On hard stone they have to pay 3d. per day for sharps. On granite the employers pay for the tools sharpening. The cost of their living is about three francs per day. They work ten hours per day, seven days per week (including Sunday), and, when required, overtime. Most of the masons come from the provinces, and have settled homes there; so, after working about nine months in the year, they return home. When they come to the city for employment they take lodgings, which cost them from 12 to 15 francs per month. They appear to be healthy, clean, and well dressed for workmen; mostly all young men, from 25 to 30 years of age; all sober men, although brandy is very cheap. They seem to spend much of their time in drinking wine and coffee, playing at billiards, cards, &c.; not given to reading, as we only saw one newspaper at the cafés where they resort to in the evenings.

With regard to home comforts, we think that they do not enjoy domestic life as we do; for when a young mason gets married, his partner goes out to service. He has to go to the cafés for his food, and only meets with his wife in the evening, in their room. Should they have any children (they never have any more than three, at most), they are generally sent out to nurse. This system must take away all affection

from parent to child, and child to parent: that such is the case is our notion.

Materials used for Building.—Generally all the fronts are through stone walls. Party-walls of rubble stone; partitions of brick; joisting of iron, similar to Fox and Barrett's patent; between the joisting is filled in with brick, arch-fashion, with a portion of concrete. They use a deal of concrete, which we think is much better than ours; their method of making it is different to ours; they mix small gravel and lime together, put it through a mill, driven by a small engine, next mix it with a rougher material, well watered; it is then carried to the foundations, and thrown in by the barrow-load. Our system is to mix it on the ground, and turn it over.

The cost of the best stone in the city of Paris is from 2s. to 3s. per cubic foot; a more common kind from 1s. 8d. to 2s. The stone quarries in the neighbourhood are now nearly exhausted, so the stones have to be brought from the provinces a distance of 200 miles.

Having said so much about the buildings, we will now endeavour (having visited some of the yards where they prepare the stones for the buildings) to describe the way the masons do their work, which differs from our method. The stones are thrown off the trucks to the ground; the mason begins to work roughing out, that is, making the beds and joints, and taking the rough off the faces. The block is taken away to the building to be fixed in its place. The mode of raising the stones is done by a crab, worked by a steam-engine, which takes a long time in comparison with our mode; they take from twelve to fifteen minutes to raise a stone two tons from 30 to 40 feet high. By our system we can raise the same weight in from seventy seconds to five minutes; and the advantage we have with our travellers makes our method far superior, by placing the stone in its proper place at once; our neighbours have to run the stone along the top of the walls, on planks with rollers, before they get it to its place, and then they have no tackle to fix it properly: the consequence is bad beds and joints, that are not pleasing to our English notions of good masonry; and when the building is got up to its proper height, they then put up workshops in front of the building, to work out the details and finish it down. It seemed to us to be a very rude way of going to work, from the method of finishing their work after the building is raised. There is not the skill required for forming the mouldings and the several details; the large blocks of stone being partly roughed out, it gives them a notion of what they are going to do; but here comes the bad bedding, &c.; in carrying out the details, the beds come often into the centre of the moulding, the joints sometimes come within one inch of the end of a rustic, or down the centre of a panel; it is caused by building with large blocks of stone, regardless of what way the details have to be worked out. Such work would not be allowed here by our architects or clerks of works. However, there must be a saving of work in beds, &c., but it is not mason-like, according to our rudiments of the art of masonry.

We will now describe the kind of tools that our neighbours use. They are something like our own, except our axes are not toothed. They also have got a toothed hammer that we have not got, but it would not an-

swer for the working of Portland stone, which is mostly in use in London. This tool that we speak of would stun it too much, and make the stone subject to decay. They have another tool, something like a joiner's plane, with two irons fixed. With this tool they put a smooth face on their work, they having a softer and more regular material to work on than we have. Their work appears, when finished, to be fair to an unpractised eye; but when the sun shines you will see its ups and downs. It is not what we consider good finished work.

We must speak well of the masons, for when we made them understand that we were English masons they allowed us the liberty of using their tools. They seemed much pleased at our style of working. Their method of holding the chisel differs from us. They hold the tool between the three first fingers, resting on the thumb and little finger. They cannot have the power to guide the tool that we have; by holding it by four fingers resting on the thumb, an English mason drives his tool with one blow six times further than our neighbours across the water.

We now claim for our countrymen in the trade as masons to be more skilful and systematic in the executing of their work, either for quality or quantity, than we have yet seen. Since our return from Paris we have taken some trouble to examine our buildings at home. Although they are few and far between, yet in the City, in the back streets, there are halls and places of business of beautiful design, full of architectural details. There is nothing that we saw in Paris that can be compared to Cannon-street station, or St. Paul's. Somerset-house, a fine stone building, is very similar in design to some of the buildings in Paris: Chancery cross railway station,—there is nothing in Paris the least like it in that line. Whitehall Chapel, the Treasury-buildings, the new Houses of Parliament, stand alone for their grandeur of architecture and perfect workmanship, not forgetting the old Abbey. Then there are the new Government offices, Foreign and Indian, which will bear comparison with any of the best buildings in Paris. The variety of colour in the material here enlivens the architectural design, and takes away the sameness that we observed in some of the large buildings that we saw in Paris. Crossing the park to Pall-mall, there are some of our best buildings, so we went as far as Grosvenor-place, to view the latest improvements on the Marquis of Westminster's estate. Here you will see specimens of masonry that will bear any inspection. It would be well if other marquises were to follow the same example, and improve their estates; it certainly would much improve the look of the city. We have hope, after seeing what the emperor has done for Paris, as taking down an old city and rebuilding it; the fact is, he will have it finished in a few short years, at the rate he is going at present.

We may state that we visited the Louvre, Hotel des Archives, Notre Dame, the Madeleine, and the Pantheon. This last is a noble building, similar to St. Paul's, but far short of it in architectural detail, with the exception of the dome or domes, as there are three distinct domes, built one within the other; in the centre one there is beautiful painting on the soffit of the arch, which has a very grand effect from the inside. There must have been much mind displayed here; it was certainly a great treat—worth a trip to Paris, if we had seen nothing else—to see the system of

arch-jointing around the galleries and stairs, flying in every direction over the domes, apparently self-supporting. For studying arching and domes, this is the place. We also visited the Palace of the Luxembourg, Hotel des Invalides, the tomb of Napoleon, St. Cloud, Versailles, but did not get into the interior of St. Cloud. Versailles is a palace worthy of the name. As Hampton-court is to the Londoners, so is Versailles to the Parisians, but far surpassing Hampton-court and all other courts, with the exception of our fine trees and the grand avenues of chestnuts through Bushy-park. They have got nothing like it; their taste and ours do not agree, in the clipping and pruning of large trees and trying to make a hedge-row of them. This does not suit our notion of taste.

Before leaving Paris we again took another look at the Exposition, which is the best representation of art, industry, and science, that we have yet seen, far surpassing, in magnitude, any of the former Exhibitions. We took notice of different samples of terra-cotta from various countries; we thought that England had produced as fine specimens as any we had seen, and displayed much artistic skill. Our attention was taken up with the style of buildings of various countries. We examined the model houses, by the Emperor Napoleon, for the workmen; they are semi-detached, with three floors to each, divided into four rooms for one family; they are the most comfortable homes for workmen that we have yet seen. The ground-floor, being shops, could be let for £16 per year; first-floor, £10; and second-floor at £8. They are well finished, having the walls plastered and papered. Had we such houses here at the rents, the British workman would rejoice, instead of the barn-like buildings that we have here.

We feel that we are rather out of our element in making out reports, but being confined to matters connected with our own branch of trade as masons we have endeavoured to do our best, and hope that it will meet with your approbation. We offer our sincere thanks for the opportunity we have had of visiting Paris.

MASONRY, &c.

By THOMAS CONNOLLY,
STONE-MASON.

WHEN the Reform Bill received the Royal assent, and ministers dined off fish at Greenwich, politicians, big and little, felt respite from their labours. The Lords and Commons were off to the moors, the mountains, or the Continent, in quest of health or pleasure; while the smaller fry had to be content with a trip to Margate, Brighton, or the Paris Exhibition. Having taken some part myself in the Reform movement, and watched with intense interest every stage of the great measure by which 500,000 of my fellow-countrymen were advanced to the full dignity of citizenship, I felt, like my betters, entitled to some recreation, and made up my mind to take it; but a little calculation convinced me that the state of my finances would offer a very serious impediment. "Where there is a will there is a way," saith the old proverb; and, having the will, I was not long devising the means—learning that the Society of Arts were sending working-men to the Paris Exhibition to examine into and report on the works there in connection with their respective trades. Having worked as a stone-mason for 25 years, I made application on the part of my trade, and was accepted. "To Paris and back for 31 shillings," with one week's accommodation at the *logements* in the Avenue Rapp, was soon arranged with Mr. Layard's committee; and at 6 o'clock the next evening I was on the platform at London-bridge station, carpet-bag in hand, for the first time intent on removing, *viz* Newhaven and Dieppe, beyond Her Most Gracious Majesty Queen Victoria's jurisdiction. I selected Newhaven and Dieppe in preference to Dover and Calais, because I read a book that the most beautiful way to enter a country is to follow the track of the invaders, and I suppose the same rule would hold in leaving it; and, true enough, that line of coast has lost none of the beauty or fertility which attracted the iron lords of Normandy to come over and parcel out the fair lands of England between them and their followers. As the time for starting approached, I found I had plenty of company of the third class like myself—many of them fine, stalwart men from the north—bound for Paris and the Exhibition, to see what truth was in the cry that all the nations on earth were leaving us, and that the trade of England was leaving it. Once seated in the carriages, and tickets duly examined, we went out much faster than the Normans came in.

Stephenson calmly reposes amid the statesmen and philosopher; in

Westminster Abbey: his genius is administering to the enlightenment, the wealth, and comfort of mankind. It enabled even us of the third class to reach the edge of the Channel in about two hours. On our arrival at Newhaven it presented a very dull appearance. The only sign of life or business which I could perceive was the sailors passing to and from some sleepy-looking steamboats, snugly ensconced in the narrow gut of water which serves for a harbour, waiting for the tide to rise to set them afloat: and a gentleman (with features which denoted his eastern origin) occupying a small apartment near the station, surrounded by a crowd of my fellow-travellers, with whom he was employed in exchanging a quantity of small French coins for English money. I have a perfect dread of those peculiar-featured gentlemen; for, whenever I engage in mercantile transactions with them, at Petticoat-lane or elsewhere, they invariably have the best of the bargain. On this occasion I watched the operations going on with much interest, and with a view to make myself master of the rate of exchange; but, although I watched attentively for a considerable time, the value of napoleons, francs, and sous was still a mystery to me: and in the end I had to bow to his superior knowledge of the money market, and place myself entirely in his hands. I made up my mind to stick to my substantial English coin as long as I could, and handed him one sovereign, for which he gave me very near a handful of francs, half-francs, and sous: and when, by the aid of one of our party, who had been once on an excursion to Boulogne, and was therefore, I considered, some authority on French matters, I ascertained that I got something near the value, I felt very much relieved and gratified at having surmounted the first serious difficulty I had to encounter on my travels.

The money-changing ended, every one was soon aboard, securing a berth, and fortifying themselves with sundry drops of brandy or rum, or the more substantial material of bread and beef, for the dreadful ordeal of seven hours at sea. If some of those foreigners who think that every Britishman is born a sailor was present, he would be inclined to form a different opinion. There were two boats getting steam up, a paddle for the first and second classes: but, as the lives of the third class were not so precious, they must sail in a scrow; but on the payment of a shilling they might raise their rank for the voyage. What a leveller of rank is money!

Many of my aspiring companions availed themselves of the generous offer, but I considered that, even if I went to the bottom, I should be near at home with my own order. Steam up, "Let go the moorings;" we were soon under way and bearing for the coast of France. With a moonlight night, a clear sky, and a nice wind, we were soon clear of the harbour, and fairly into the channel. At first the rolling of the vessel made us feel a little nervous: but as we got used to it, and somewhat noted that she did not mean going down, such as escaped sickness appeared to enjoy their rocking, and, like true Britons, amused themselves with singing "Britannia rules the waves," and with observing the changing forms of the ships going in and out the channel. At sunrise we were approaching Dieppe. It was a gorgeous sight to see that red sun emerge from the water, imparting to the channel ahead the

appearance of molten gold, and gilding with its rays the spires and house-tops of Dieppe, which we had just caught sight of. After a short delay, waiting for tide to cross the bar, we reached the quay. I was soon on shore, a foreigner for once in my life, everything strange around me. The quaint old town, with its picturesque streets and stone buildings—the people all speaking in an unknown tongue—the quiet-looking gens-d'armes, who never appear absent from your sight while you stay in France—and old men and women engaged at the most laborious work, a result of that terrible passion for glory which dazzles the mind of the French nation, and conscripts for her armies 800,000 able-bodied men from a population of 34,000,000. I felt humiliated on hearing children speak French, and was just going to rail against our Government for not teaching it to me, when I called to mind all the valuable time I had wasted in some profitless pursuit, and which would have served me to learn several languages, and feel at home anywhere. However, with the aid of sundry signs—for my tongue was now of little use to me—I made my way to the Hotel "Chemin de Fer," and with our company enjoyed a good English breakfast for 2fr.; with the considerate intimation that if we came back that way we should have one much cheaper. a calculation, I presume, based upon a knowledge of their countrymen at Paris, led them to believe we would then have less francs at our disposal.

As the train would not start for some time, we visited the church of St. Jacques, a fine specimen of flamboyant Gothic, but disfigured inside and outside by restorations in Romanesque, from which I concluded that Cromwell's troopers and English churchwardens were not the only parties whose barbarism disfigured this beautiful style of architecture. The interior, with its lofty nave, chancel, and transepts, has a fine imposing effect, while the view from the top of the tower over the chancel and the surrounding country, will amply repay the labour of ascending 216 steps. We had a look at another church, and at the hospital, and at half-past ten started for Rouen, our route being through Normandy, which is justly styled the garden of France, it is so beautiful and well cultivated. On either side of the line appear in quick succession the chateau of the noble, in the midst of a fine old wood, standing on the slope of a hill or the edge of a lake, with cheerful red brick cottages and farm houses, surrounded with nice hedge-rows and orchards. The villages and towns through which we passed had all the air of industry, cleanliness, and comfort which characterise the best rural districts of England. Women and old men appear to do most of the labour in the fields; but the land is light, and easy of cultivation, and subdivided among upwards of ten million small proprietors, a position which I believe the French peasant would not exchange for that of our agricultural day-labourer. With an Englishman as engine-driver, and composite blocks for fuel, we travelled at good speed. The carriages were somewhat rougher built than our third-class carriages, but quite as comfortable. As in the fields many women were employed in various ways on the line and at the stations and there is not that hurry and bustle which we are so accustomed to in England. Whether this arises from a better system or a want of traffic I am unable to say; most probably the former, as the great number of tal

chimneys which you see along this line indicate a great amount of manufacturing industry, which usually creates traffic.

On our arrival at Rouen, the Manchester of France, and one of its oldest corporate towns, we had a stay of one-and-a-half hours for the train to Paris; and being desirous of making the most of our time, we had a run to some of the churches, which are very rich and elaborately sculptured, more especially on their western fronts; the carving is softer and more delicate than that of our Gothic churches of the same period, but the buildings lack that boldness and clearness of outline which impart such majestic dignity to our cathedrals. Few Englishmen, having any time to stay at Rouen, omit to visit the statue of Joan of Arc, in the market square. On this occasion I met a great number of our party viewing it with respectful reverence, and expressing regret at her cruel fate, which, at least, was some atonement for the barbarism which has stained the chivalry of a brave English army, and which consigned a woman to death at the stake for religious enthusiasm and triumphant patriotism. Our tour of inspection left no time for refreshment; the train was now ready to start; and a hungry Englishman is not a very pleasant animal; but, once seated, the difficulty was soon got over, for those who had a little stock of provisions left very generously divided with their less fortunate companions. It is extraordinary how a little travel divests men of their selfishness.

At Rouen you cross the Seine, which is there a very beautiful river, studded with numerous islands; and, as our route lay through its valley, the prospect on either side of the line was delightful, miles of forest crowding the very hill-tops, and the silvery windings of the river almost constantly in view. The Seine above Rouen is certainly more beautiful than it appears to be useful. There is little commerce on its bosom, and sailing-vessels or steamboats very seldom seem to disturb its waters.

Towards sunset we approached the suburbs of Paris, teeming with ornamental grounds, and villas multiplying in number and beauty. As we advanced I was regretting that our pleasant journey was so soon to terminate, when the train shot through the *barrière*, and in a few minutes arrived at the Western Station. Our experience at Dieppe and Rouen diminished the timidity which one feels on the first occasion of visiting a large city, and unable to speak the language of its inhabitants; but all apprehension on that ground was removed when we discovered a young lad in Highland costume waiting for our arrival. How agreeable is the sight of a national costume when away from home; you feel that you can rely on the wearer for advice or protection. John Hill Burton, in his history of Scotland, alleges that the Highlanders came from Donegal some centuries ago, so, being an Irishman, I lost no time in claiming affinity with our youthful guide, who at once conducted us to two large covered waggons, which were in waiting to convey us to the *logements* in the Avenue Rapp, which lay at the other side of the city. Our mode of conveyance, although inelegant, was very comfortable, and the horses quiet, sensible-looking animals. They appeared to understand the French language spoken to them by our coachman much better than most of us who were riding on the waggon, and to know that with all his noise and gestures he had no desire to hurt them,

or that they should harm themselves by going fast. However, there is no picture so dark but has a bright side to it, and although this easy pace delayed our dinner, it afforded us an excellent opportunity of seeing that part of the city; and if I write the first impression which I had of its beauty, I must say that on this side of Paradise I thought there was not a finer place.

The longest day must have an end, and our pleasant journey drew to a close, when, crossing the Pont de Jena, we entered the Avenue Rapp, and, quite close to the Exposition, drew up beneath the grand portal of the *logements*, where a veteran soldier of the Mexican expedition mounted guard. On alighting from our carriages, we were immediately surrounded by a group of those who had arrived some days before us, and obliged to answer many anxious inquiries relative to the old land, such as whether the Queen was still upon the throne, as the newspapers had reported a Fenian insurrection at Manchester, with the miraculous escape of Col. Kelly and Capt. Deasy. Another wished to know if there was any one left in London, as all the people seemed coming over here. After satisfying them of the stability of a throne based on the affections of the people, and that there was still some traffic in Fleet-street, and that their temporary absence would not affect the revenue, they allowed us an interview with the resident manager, Mr. Glazier, a gentleman who was extremely civil and obliging to all who were entrusted to his safe keeping. When our names were duly entered in a book, we were divided into sections of four, and each batch was furnished with a key, on which was ticketed the number of their ward.

Our quarters were in a series of clean, well-ventilated, one-story, temporary buildings, separated into blocks by nicely gravelled walks. Each block was divided into apartments capable of containing four beds, one in each corner, which, with a couple of chairs, tables, and washing utensils, completed the furniture. The beds were quite as narrow as that on which the great Duke of Wellington is reported to have slept, when a friend remarked, that if he attempted to turn he would fall out, to which the hero replied, "When you think of turning, it is time to get up." The committee had this in mind, no doubt, when they furnished these places, desirous that we should not waste our time in bed. Refreshing ourselves with a good wash, we stowed our things away and went in search of dinner, with the full consciousness of being able to do it ample justice after our long ride. We read "English coffee-house" in plain Saxon, on a signboard, which, on entering, we found to be kept by a Frenchman and his wife, who carried on a millinery business in Piccadilly, where, I presume, they acquired the art of English cookery, and here it was practised in all its naked simplicity. With a gas-stove, not larger than a Dutch clock, they prepared food for all their customers, which were not a few, and I am convinced they could have supplied as many more. Coffee in a can, potatoes and beef-steaks fried on a pan, varied with eggs and ham, were the staple dishes. However, the extreme civility of these persons, and a good appetite, made everything palatable, and we felt satisfied when we reflected that we had a place to sleep, and a place to get food with those we could understand, as long as our funds lasted. After dinner we retired to our cantonments, where, nicely balanced on our narrow beds (to

use one of Mr. Lowe's classical figures of speech) we sank into the arms of Morphew, and arose next morning, invigorated and refreshed, to engage in the pleasure of sight-seeing, which, in Paris, at any rate, is accompanied with some labour, when your time is limited and there are many objects of attraction.

On receiving my appointment in London, I was instructed to report, on my arrival in Paris, to Mons. Haussoullier, the agent for the Society of Arts at the Exposition, and like a dutiful servant, the moment the doors of the building were opened for admission, I proceeded to the British Workman's Hall, and presented him with my credentials. I was received with distinguished consideration, and furnished with a copy of the catalogue of the Exposition, the services of an interpreter, Mons. Poché, being placed at my disposal; and if I have not brought away all the knowledge in their heads it is my own fault, for they were ready and willing to impart it to me. I desire to accord to them my most gracious thanks, and to say if they should ever come to London, let them call on us and I will walk about with them until they are tired.

Having seen the London Exhibition in 1862, and not being an adept in manufacturing industry or the fine arts, the city, with its buildings and people, had more attraction for me, and I resolved to examine it. First I purchased a map, showing the principal streets and objects of interest, for 1½fr., and by its aid I found my way very well. You can only go half way astray in Paris, owing to the river which divides it. But I must not carry you with me on my journeys day after day, or I will make you much more tired than I had been. I will try and sum it all up; but I assure you it is not so easy a task as some persons think—more especially to one who has been brought up the greater part of his life to chiselling stone—but, however imperfect a summary, it will be the result of my own observation and inquiries.

I shall begin by observing that to a person who has passed the bounds of Britain for the first time, Paris appears a wonderful place; everything is on such a grand and magnificent scale. The miles upon miles of splendid boulevards, avenues, and streets; the extent and grandeur of its imperial palaces; the immense number and great beauty of its public buildings, monuments, and churches; its parks, gardens, squares, and places of recreation adorned with sculpture and fountains; and its handsome quays and noble river, spanned by twenty-six bridges, contribute to render it unrivalled by any city in the world. The richness and variety of the goods exposed for sale in its shops; the splendour and decoration of its cafés; the magnificent equipages and crowds of fashionably-dressed persons which throng its streets, must indicate it a place of great wealth and opulence; while the cleanliness of the streets, the order and regularity of the traffic, the beauty of the lamps, and the brilliancy of their lights, are luxuries to which the people of London are entire strangers. It is evident from the great improvements now in progress that this city is to be made more beautiful; everywhere you turn your steps and old Paris new streets are being pushed through, and you see the work of demolition and rebuilding carried on, and that to such an extent as to raise the question in my mind where all the money came from which was necessary to carry out those improvements; but I discovered the

solution in the fact that governments can raise vast sums, sometimes squandered on costly and ruinous wars, which can bring no profit to the nation; but an expenditure in this way will make Paris still more the focus of fashion and pleasure, and attract persons from all parts of the world to spend in its saloons and shops the wealth which has been created by other people, and an amount which I presume will make a good interest on the many millions invested. Verily the Emperor must be a good economist. That all those improvements are conducted according to a regular plan, and enforced by some powerful central authority, is perfectly clear; for no impediment or interest is allowed to stand in the way, and the architecture of the streets is uniform and regular.

In Paris it would appear the authorities and the architects combine to make a perfect street; in London the Board of Works, the vestries, and the architects agree to differ; and when there has been an opportunity of making a decent street, as in Southwark, a number of buildings are erected in every style of architecture, from Hindoo to Paxtonian, and some in no style at all, but each vying with the other in hideous deformity. Paris is entirely built of stone, in a sort of renaissance, or perhaps Louis XIV., style. The new streets are generally broad, and the houses lofty and of a uniform height, with balconies on the first and attic stories, protected by a nice light wrought-iron railing, which, with the luffer-boarded window shutters, opening on the outside, impart to the elevation an agreeable and airy effect. There is a variety in the designs, without affecting the general harmony; but where a street is long a public building of some dimensions is generally introduced to prevent monotony; the houses are all more or less adorned with inlaid marble and sculpture judiciously distributed.

The hall and staircase are the parts on which the full genius of the French architect is lavished. Many in the public buildings are grand and imposing, especially those in the Tribunal of Commerce and the Palace of Justice, where the walls, columns, pilasters, steps, &c., are all stone or marble. But if the French architects can combine to produce these buildings, there are isolated buildings in London—such as St. Paul's, Somerset-house, and the Houses of Parliament—which are unmatched by any in Paris in their respective styles.

In the selection and adaptation of pure classical examples to modern requirements, I believe our architects can hold their own, and I think few will deny that many of them have imbibed the spirit and imagination of the ancient free masons. Their Gothic churches are certainly unequalled by any others that I have seen, but the decorations of the Sainte Chapelle will not excel the restorations of St. Stephen's, at Westminster. Many of the public buildings recently erected in Paris are very fine, especially the Tribunal of Commerce, the Palace of Justice, and the new additions to the palace of the Louvre, but by far the finest and most imposing is the Imperial Academy of Music, which is now almost completed, and stands close to the junction of the Boulevard des Capucines and the Boulevard des Italiens. It is designed in the French classic renaissance style, covered with carvings and sculpture, and enriched with marbles and bronzes in circular openings, which run all around the

building. Under the cornice are placed busts of the great composers, and immense groups of sculpture surmount each angle of the edifice. I spent the greater part of a day in going over it, and collected some statistics, which I will here reproduce; and if you put them together you will have a better idea of its magnitude and grandeur than my very slender description can give you.

At present there are about four hundred workmen employed upon it; but for a long time there were eight hundred and sixty, exclusive of artists. Up to the 31st of December, 1866, the quantity of materials used in this gigantic edifice was 1,518 cubic metres* of rubble stone, 35,341 cubic metres of plaster, 93,183 cubic metres of various stones, 3,220 cubic metres of lime, 9507 cubic metres of sand, 5,762,000 bricks, 7,097 cubic metres of gravel, 3132,000 kilogrammes of cement, 760,648 kilogrammes of cast iron, and 452,155 of wrought iron. There has been used for the decoration of this sumptuous building, 500 monolith marble columns, of various colours, i.e. green, red, violet, white, &c.; and they were brought from the Pyrenees, Italy, Sweden, Scotland, and Algeria. The finer stones used in the construction of the building were brought from Isere, and are called "Echaillon;" they are rosy-white or yellow in colour, and are almost as dear as marble. After the Echaillon, the finest and most sought for is the Jura stone, a reddish colour. Many sorts of stone from Lorraine and Burgundy were also used. The monolith columns of the peristyle weigh 11,000 kilogrammes each. They are eight metres long and one metre ten diameter. It requires two days to fix each of them in their places. In the sculptures are included forty busts, twenty grand statues, and four immense groups of figures. However great his genius, the French architect does not disdain to bring to the aid of architecture the sister arts of sculpture and painting; or, by the free use of marbles and bronzes, and of colour and gilding, to give effect to the interior of buildings.

The Church of the Holy Trinity, in the Italian style, which is now almost completed, is a good example of the harmonious blending of the arts. Perhaps there is no quality more conspicuous in the design of a French architect than its fitness, for upon entering any of the buildings you have no difficulty, from the nature of the arrangements, in determining its character, and you cannot fail to recognise the adaptability of every part to the purpose for which it is designed. There is no building which I visited where this merit is more apparent than in the additions to the Imperial Library, in the Rue de Richelieu. Here, in a room of about one hundred and fifty feet square, ventilated and heated, four hundred readers are comfortably seated at desks, and supplied with books from an adjoining apartment, brought to them by a mechanical contrivance. This apartment, which is about two hundred and fifty feet long, one hundred feet broad, and fifty feet high, is divided longitudinally and transversely by wrought-iron or work partitions, on which shelves are fixed. It is traversed by passages and galleries, to provide access to the books, which are classified and stored on the shelves. Many thousand volumes

* The cubic metre is 35.3 cubic feet. The kilogramme is 2.2 lbs.

are here kept in a comparatively small space, which can be conveniently ventilated and heated for their preservation, and where they are close at hand, to be furnished to the reader with little trouble or loss of time. At the British Museum library, when a book is required, in many cases the messenger has to go a long distance to get it, and considerable time is lost before it can be in the hands of the reader. There, a large wing of the building is used to exhibit the backs of the books which cover its walls, while almost the entire space of the rooms is wasted, or only available for a passage.

In the science of construction, and the judicious use of the materials, stone, wood, and iron, the French architects display great skill. The right material is generally used in the right place. Their buildings being constructed as much as possible fire-proof, we seldom read of a great fire in Paris. They are generally well built, for the builder and the architect have to insure their stability for ten years, and are held accountable during that period for the expense of any repairs arising from imperfect workmanship or from defective materials. The fronts are all built of large stones, bedded and jointed, which run the full thickness of the wall. They are laid dry on each other, and afterwards run with plaster. There are openings left for the doors and windows, and projections for the cornices, mouldings, and carving. When the walls are carried to their full height, the masons work the front of the building, commencing at the top; they finish and take down their scaffolding as they descend. The back and end walls are built with small squared stones on the outside, and with unsquared or rubble on the inside. They are bedded in plaster; very little care is used in the bedding of this rubble, as the plaster sets soon after the stone is laid. The flues to carry off the smoke are constructed with earthenware pipes built into the walls; and as those walls settle unequally on the foundations, you observe on every gable-end exposed to view that open joints are left close to the quoins, so that each wall may settle of itself, without drawing the other with it, and causing rents in the building. These open joints may be filled up when the work is seasoned. The floors are constructed with light wrought-iron girders of an I section, laid about 2ft. apart, and arched from one to the other with hollow bricks bedded in plaster. The arches are very slightly curved, and their springers rest on the bottom flanges of the girders. The soffit is dubbed up and made level for the plaster of the ceiling, and a slight piece of wood is laid on the top of each girder, to which the floor-boards are screwed. The staircases are all built of hard stone, with iron balusters and hand-rails. The halls and corridors are generally floored with marble squares, of various colours, or a composition of cement and marble chips, which is often a good imitation of mosaic. Very little wood is used, except for the flooring-boards, doors, windows, and roof. In all the houses which I have seen, the sanitary arrangements appear to be of a very defective character. Water is used very sparingly: in fact, they never think of letting it run through their closets, although, judging from the liberality with which it is used in flushing the kennels of the public streets, Paris must be abundantly supplied.

When the ground has been excavated for the basement of a building,

the stonework of that portion is usually bedded in mortar composed of lime and sand, or in cement mixed with sand, but all above the surface is bedded in pure plaster, the extensive use of which enables them to erect their buildings in a very short space of time, and to use any small pieces of stone in the cross-walls. The gypsum of which this plaster is made is raised at the Hill of Montmartre, in the suburbs of Paris, the supply of which, I learn, is almost exhausted. It is prepared close to the quarries, and brought to the works in sacks, where it is sold for 17fr. the cubic metre. It is a good, strong, coarse material; the ashes of the fuel used in the burning being allowed to intermix with the gypsum, but when required for exportation, or for finishing and ornamental work, it is passed through a very fine hair-sieve.

The stones chiefly used in Paris are oolites, of which of the harder and finer sorts there are 13 varieties brought from the south, south-east, east, and centre of France, and some are raised in the immediate neighbourhood of Paris. The price varies with the quality and size of the blocks. For first-class stone, delivered at the works in blocks not smaller than 2½ metres long and 1½ thick, the cost is 193fr. the cubic metre; for blocks of 5¼ metres long by 2½ metres thick, 418fr. the cubic metre; and for blocks 6 metres long by 2½ metres thick the price is 518fr. the cubic metre. These stones are durable, and many of them will take a good polish. They are of various colours, but chiefly white or reddish-speckled, and are used in fountains, parapets, and copings of bridges, balconies to windows, and other ornamental work much exposed to the influence of the weather. They are also used in steps, floors, staircases, and other places where there is much wear. By a municipal regulation, the first story of every building erected in any of the principal streets of Paris must be built with hard stone, but the builder is at liberty to use soft stone for the remaining stories if he desires to do so. The wisdom of this regulation must be apparent to any person who examines the restorations which are now being done at the Palace of the Louvre. For several feet above the surface, through the influence of the damp arising from it, the stonework is completely decayed, while the remainder of the building above that level is comparatively sound and good. The soft stone which is used above the first story is a fine, even, close oolite, easily worked. It is like the stone we get from Bath and its neighbourhood, but of a much better description. There are two qualities of it raised within a circuit of fifty miles of Paris, and several of the quarries are close to it. Stone from St. Just may be purchased, delivered at the works in blocks of any size, at 65fr. the cubic metre, and the smaller size blocks at 37fr. to 40fr. the cubic metre. The cheapest stone used in Paris is that from St. Denis, in the department Seine-et-Oise, which can be purchased delivered at the works for 30fr. the cubic metre.

These prices are little less, if any, than the cost of stone in London, where good Portland stone is purchased for 2s. 6d. a cubic foot, and soft stone for 1s. 1d. the cubic foot. When delivered at the works, the blocks are cut up into the sizes required for the masons, in the same manner as it is done in London,—the soft stone with a cross-cut, and the hard stone with a frame-saw and sand and water; the men employed in this work receive from £5 to £8 a month.

As in London, the building erected in Paris is chiefly done by contract, but with the important difference, that each description of work is let to a contractor of that trade alone, whereas in London the entire works are let to one person. The contractors in Paris are usually men who have been brought up to the trade in connection with the works. They contract for, and will necessarily have the skill to direct it themselves. The London contractor, in most cases, is not brought up to any of the building trades; he merely finds the capital, and some other persons supply the brains. It is clear that a better description of work is the result of the French system, where it is executed under the personal superintendence of a man who understands it, and who has a personal interest in its proper execution; and that there are greater facilities for a steady, industrious workman to advance himself and become a contractor some day. This method of contracting existed in London before the concentration of capital in the hands of a few; and it is still practised in many of our provincial towns, with the same beneficial result as at Paris.

The mason's contract, in addition to the stonework, includes the plastering and the brickwork. Of the latter there is very little done in Paris. I have only observed an odd house built of brick. I presume the cost, which is 60frs. per thousand for middling bricks, is some impediment to its more extensive use.

The bricklayer and the plasterer are not distinct trades, as in London, but are included in the masons' trade, the operatives of which are classified into *Limousins*, *poseurs*, and *ravaleurs*. The *Limousins*, or wallers, build the sewers, drains, and basement story of the building with rubble stone, and as this description of work requires very little skill to execute it, the men employed being nothing more than handy labourers, they are paid from $4\frac{1}{2}$ to 4frs. per day, which is only a fraction more than is paid to the navvies who get out the ground for the basement, and who receive from 4 to 4frs. per day. The masons who fix the stones of which the fronts are built are called *poseurs*; they generally confine themselves to this branch of the trade. Their method of fixing, as before stated, is to lay the stones dry into their places, and when the course is completed to run the joints with plaster. In large buildings, where the walls are raised to a great height, and the stones press heavily on each other, to preserve them from flushing, the plaster is prevented from running to the front by placing thin pieces of wood, about 2 $\frac{1}{2}$ in. broad, in the joints which are slipped out when the plaster sets; and when the walls settle those open joints are pointed up. Owing to this precaution of directing the weight on the centre of the stones, you will very rarely see the mouldings or other ornamental work on the face of a building flushed through pressure. Except in marble or polished work, the French masons use very little care with the beds and joints of the stonework: they are often 3 in. apart, but as the plaster with which they are filled is almost as durable as the stone, and like it in colour, it does not affect the general appearance of the building. The skill of the *poseur* does not seem to be highly estimated, as his wages are only 5frs. a day, or 1frs. less than the *ravaleur*, which comprises two classes, viz., *ravaleurs* in plaster, and *ravaleurs* in stone. The *ravaleurs* in plaster erect all the walls of t

building above the basement, in which small squared or rubble stone is used. They build all the fire-places and flues, and turn the brick arches for the floors. When the house is covered in with slates or tiles, they coat all the walls with plaster, and form the ceiling and cornices. The plaster used for building the walls is mixed with water, in a wooden trough, the sides of which slope outwards towards the top. It is brought to the scaffold by the labourer, on his head, and when it sets a little the ravaleur spreads it on the wall with his trowel or hands—he is not particular which—and beds the stone: the stones are placed dry, in the centre of the wall, and afterwards grouted with thin plaster. The ceilings and walls are all finished with one coat of whatever thickness may be required by the unevenness of the walls, which he ascertains by plumbing-screeds or narrow strips of plaster at each angle of the room, and at convenient distances from each other. Between the screeds he puts on wet plaster with a broom, his hands, or the trowel, and forms the surface of it level with the edge of a long, straight trowel, having teeth like a fine saw; a little thin plaster laid on and rubbed with the flat of a trowel makes it a fine, smooth surface. The cornices are made of pure plaster, and run with a mould; but when very large and ornamental they are done by moulders, who make them of a composition of plaster, whitening, and glue, in which flax fibres are intermixed to add strength. It is hollowed at the back, and made so light and yet so strong, that it may be attached with plaster, or nailed to the walls and ceiling. The ravaleurs in plaster are a very useful and skilled class of workmen, and are paid 6frs. a day. The trowels and other tools used by them are very awkward and clumsily made, and although these men execute some excellent work, they do it in a very unworkmanlike manner. You seldom see an English operative use plaster or mortar with his hand while he has a tool to do it with.

The ravaleur in stone corresponds to the trade of a mason in London, but as the principal part of the work in Paris is executed in soft stone, and after the walls are built, while in London it is done with hard stone, worked on the banker before it is fixed, the method of working in the two places is entirely different, and one would have some difficulty in using the tools of the other without considerable experience. The ravaleurs in stone are divided into two classes, namely, those who finish the fronts of the building, and those who work the beds and joints of the stones before they are fixed. This latter class are called "tailleurs de pierre." The blocks of stone for a building are generally deposited near its site if there is room, and, if not, on the next convenient open space; and when cut into the required sizes, those men work the beds and joints, and if the stone is required for a moulding or cornice, they scribe on the mould and chamfer off the surplus. They seldom use a mallet and chisel, except to run a draft around the arris, but work the stone with a pick, a tooth-axe, and a diamond hammer. The mallet and chisel they use very imperfectly, but the pick and axe they use with great dexterity, and turn out a great quantity of that kind of work. They never banker a stone to work it, but merely lift it on a slant, and seldom turn it more than once before it is finished. They have no sheds to protect them from the weather, and are paid at the rate of 6 francs per day.

The ravaieurs who work the fronts of the buildings are the most skilful men in the trade, and are paid 7 francs a-day when employed at day-work; but as a gang of men generally do the work of a front by contract, they often earn more than day-wages; but when an architect requires to have his work well done, he will not allow it to be done by contract. Mons. Due, the architect of the Palace of Justice, would have the front of that building done by day-work, and it is plainly observable how superior the work is to that of the Tribunal of Commerce, which was executed by contract. For the ravaieurs to do their work, a scaffold is erected to the front, as the walls of most edifices are built overhand; then, commencing at the top cornice, they cut in the mould at each end, and with a piece of twine, rubbed with red chalk, strained from end to end, they strike the horizontal lines, pitching off the waste from the front with a hammer and chisel; they then work it very close with a tooth-axe, and finish it off with a diamond hammer or a plane, when the surface requires to be made smooth. Those planes are about 9 or 10 inches long, having two irons, one in the middle and one in the front, to enable it to cut into an angle. The irons are merely thin pieces of steel or saw-plate, slightly bevelled on the cutting-edge. The ravaieurs have a number of those planes, of all shapes and sizes, with which they work the mouldings on stone, just as a joiner would make them on wood. They seldom use a mallet and chisel, and when they do, it is very awkwardly, but execute their work chiefly with the pick, axe, diamond hammer, and plane. It is astonishing with what celerity they finish off the front of a building, but everything is in their favour; the stone, being a nice fine quality, is not flushed at the joints or the ends by the working of the plane or axe, and the stones, being the full thickness of the wall, are not disturbed on their beds by the working. There is certainly something to say in favour of this system of working stone after the wall is built. In the first place, no time is wasted on the parts that are not exposed to view; and in the next place, the lines will be more accurate, as they are struck the full length or the full height of the building; and although much of their stone-work is not so perfectly masoned, and will not bear so minute an examination as stone-work in London, their buildings will look better owing to that circumstance. However perfectly the stones may be worked on the banker, unless they are carefully fixed, you will not have the lines straight, and you cannot make them so without disfiguring the mouldings.

I believe the French system to be very applicable to buildings erected here with Bath or Corsham stone; but to those erected with hard stone it could not be applied with any advantage: for, as many of the stones, through economy, are narrow and light on their beds, they are liable to be displaced by any working on them; and hard stone requires so much labour in its execution that a man requires to have it in such a position as to be able to apply his strength to advantage. I have observed many French masons work very active and lively, yet they cannot use their strength or hands with such ease and effect as English operatives; but I think many of their tools might be used, with great advantage to their ease and health, by English masons, more especially for working the softer kinds of stone. As far as I could judge, the Frenchman en-

deavours to find out the best tools and the easiest method of doing his work, while an English mason relies almost solely on his mallet and chisel to execute any description of work. I believe the constant use of those tools, and the necessary constant action of the same set of muscles, with the continual shaking of the chest while inhaling the dust from the stone, is the prolific source of those dreadful lung diseases which cut down in their prime some of our strongest and most skilful masons. I have little doubt, if employers would attend to the ventilation of their workshops, and that men could often change the action of their muscles by the use of different tools, this disease might be abated, and the trade of a mason in London rendered more healthy. When a stone has to be worked to a mould, or fitted to a square or a straight-edge, no man can do it more workmanlike or to greater perfection than an English mason; but when the hands have to realise the imagination, the Frenchman's familiarity with art, and his early training in its principles, enable him to outstrip us: and as every building in Paris is more or less decorated with carving, you are at a loss to know how they get all their art-workmen. But the difficulty would not appear so much if you could read the large placards, in French, which are posted up at the ends of the bridges and other public places, informing workmen where they can be taught drawing and modelling every evening free of expense. That he outstrips the Englishman in this respect does not, I feel certain, arise from the possession of an especial art-genius, but because whatever of it is in him is fully developed, and encouragement is given to its practice: and if English workmen are behind in this respect it is not because art-genius is deficient in our nature, but because it is not developed and encouraged sufficiently.

When this was the case during the middle ages, there were forty cathedrals and parish churches building at the same time in England, to the carving and sculpture of which we can now point with pride and satisfaction, as evidence of the art-genius of Englishmen; and if farther proof was needed, we have it in the fact that before the erection of the new Houses of Parliament there were comparatively few carvers of stone in England; but the encouragement which even that one building gave to art labour, and the impetus which it imparted to architectural decoration, have increased their numbers considerably, and sculptors' shops—such as Messrs. Phillips, Farmers, Herps, &c.—have sprung up in London, where excellent work is executed.

It is impossible to estimate the loss which is entailed upon England through the neglect of art culture in every department of our industry. Through it we are reduced to mere hewers of wood and drawers of water for other nations. The bulk of our able-bodied population is engaged in manufacturing goods to be sold cheap, or in producing raw materials for other people to work: while the more delicate portion have to subsist on their earnings for want of employments suitable to their strength. The streets of London and our large towns are torn up with any traffic, which is scarcely perceptible in Paris; for if a ton of iron lies there, for which we may get less than £1, they are sure to put no worth of labour on it before it leaves their hands.

There does not appear to be any regular system of apprenticeship

among the masons, although there are many who learn it by a servitude for various terms; many others, after having acquired some little knowledge of it in the provinces, pass on from one branch to another, as they improve themselves, to which there is no let or hindrance on the part of the employer or the men. It is not uncommon to find there men who can work well at every branch, but they stick to that which is paid best as long as they can get employment at it; but if there is not a general servitude of apprenticeship, there is a life-long slavery of the French workman, which I feel certain would not be tamely submitted to by English artisans.

When a man is first employed at any trade or occupation he has to apply to the commissary of police for a book, in which is stated his name, age, general description, place of birth, place of residence, and the nature of his employment. He must deposit this book with his employer, to be kept by him until the workman wants to leave, which he can do without much previous notice, and the employer must give him up the book, in which he will insert what the workman leaves for. On that day the workman must take it to the commissary of police and have it *visé*, and when he gets another employer he must give him up the book. This employer, on setting the man to work, must send the book to the police-office and have it *visé*; and if the workman left indebted to his last employer, the amount of the indebtedness will be stated in the book, and the new employer will be bound to stop it, at the rate of one-sixth of each day's pay; and if he neglects to do so, the former employer can sue him and recover the amount. If a man is discovered to work without having a book, the employer and the workman are liable to a fine of 400 francs each.

I do not think the French system of acquiring a trade without an apprenticeship offers any advantage to the workman himself or to the general community. Many never think of entering the trade until they arrive at an age when other cares and anxieties distract their attention, and prevent them from acquiring that dexterity and skill which can only be arrived at by early application and undivided attention; and the community at large are affected, inasmuch as a large number of the population are employed at occupations in which they are not profitable producers, or, in other words, a less number of higher skilled men would produce the same amount at less cost of keeping. The following returns, made in 1860, and which include masons and labourers, will show the different rates of wages paid to all engaged on the erection of buildings at that date, and will, I presume, be some index to the difference in skill of those workmen:—

	1860.	
Joinersmen	31,282	
Working by the piece	396	
	<hr/>	
Total	31,677	
	<hr/>	
Living in Paris	23,440	
Moving about	8,237	

	P.	C.
417 received	2	5 per day.
521 "	2	75 "
4,313 "	3	0 "
4,141 "	3	25 "
2,351 "	3	50 "
1,894 "	3	75 "
1,796 "	4	0 "
222 "	4	25 "
2,872 "	4	50 "
2,165 "	4	75 "
6,779 "	5	0 "
410 "	5	25 "
1,535 "	5	50 "
1,515 "	6	0 "
327 "	6	50 "
233 "	7	0 "
21 "	7	50 "
42 "	8	0 "
26 "	9	0 "
20 "	10	0 "
6 "	12	0 "

It would be impossible for an employer in London to classify his workmen in this manner on a fair estimate of their skill, and therefore we must conclude, that in London there is a greater proportion of the men well skilled, and that the French system of acquiring a trade is not so instrumental in creating so uniform and general a class of good skilled workmen as our system of apprenticeship. By a comparison of those numbers, 31,677 in 1860, with 9,267, the total number employed in 1849, we get an idea of the magnitude of the improvements carried out in Paris, and the immense employment which they give to all engaged in the building trades; and as the wages have increased 1 franc a-day since 1860, and the population, which was then 1,400,000, is now 1,700,000, we must assume that there is a greater number now employed, and a larger sum spent upon them.

On the whole, the Frenchmen take their work easy, and appear to be very little frightened of their foreman or employer. There are always a great number of men about any job they are doing. I noticed at least six men employed in loading a cart with rubble, and after placing themselves in a row, they handed the stones from one to the other. In London they would never think of sending more than a couple of men to such a job, and they would have to pitch them from where they stood into the cart. As I stated before, they will always do their work the easiest way to themselves, and wherever labour-saving machinery can be introduced, they are sure to use it. The materials for all their buildings are lifted to the floor-levels by machines, some of which are very ingenious; and those in the large buildings are worked by steam-power. While looking at those machines, the idea struck me that if there were not so many Irishmen in the world, England would have to use her labour more economically.

The time worked by the operatives in the building trades is 10 hours a day in the summer, viz., from 6 a.m. until 6 p.m., with one hour for breakfast, from 9 till 10, and one hour for dinner, from 2 to 3. In the months of October and November nine hours are worked, and three-quarters of an hour allowed for each meal; in December, January, and February, eight hours are worked, and only one hour allowed for meals. The entire seven days of the week are worked, and in summer a good deal of overtime, which is paid for at the same rate as the ordinary day. Their wages are paid on the first Saturday of every month, but the workman can draw subsistence on every Wednesday and Saturday between the pays. A workman earning 7 fr. a day usually spends 3 francs for his food, which he procures at the cookshops. The breakfast is bread and soup, with a little wine; the dinner is the same, with the addition of meat, boiled or roasted, and vegetables. If he is a married man he contents himself with bread and cheese and wine, until, after his work, he gets a substantial meal with his family. Soup is used at every meal, tea and coffee seldom, except as beverages. Lodging for a single man, about 3 fr. a week; and the rent of two rooms, from 8 fr. to 10 fr. a week. Rent has so increased, that a large room which let in 1860 for £10 a year lets now at £16.

The Sunday after the pay is generally a holiday with the workman and his family; and in Paris there is every facility for rational enjoyment, for with its parks, gardens, palaces, museums, and libraries open to him, he is not constrained to spend his time in the wine-shops, although they are plentiful enough; but I must state, to the credit of the Parisian operatives, that drunkenness is not a perceptible vice of theirs; during the fifteen days I stayed in Paris I saw no more than five or six the worse for drink. The life of a workman in Paris appears tolerable enough; he feels he is the equal of every other person, and he is treated as such. There is not that harsh line of demarcation between class and class as there is in London, even in our churches. Inside the walls of a sacred edifice in Paris the poorest man feels as if he had already passed the confines of the grave, where all distinctions of rank and riches cease. Kneeling beside a duke, if he likes, he worships God from the same level; and to this sympathy of classes, I believe, is due that courtesy and refinement which are so perceptible in the working people.

But "all is not gold that glitters," for among all the enjoyments of a Parisian workman, there is nothing to compare with the substantial comfort of an English workman's home, or the quiet repose and respite from labour which the Sabbath brings him. Nothing is more intolerable or repugnant to the mind of an Englishman than the desecration of this day of rest;—to see the workmen employed on the streets and on the buildings; the shops open, and traffic carried on the same as on any other day of the week, is a thing for which the mind is quite unprepared, and the only explanation which I could get for it was, that they have so much time in winter that they have to make up for it in the summer, to which I replied, that when you do it all in summer you have nothing to do in winter. Frenchmen, with all their philosophy, make a great mistake in this incessant toil. Were the Sabbath to be observed, production would not be impaired, or the means of employment diminished.

a single franc. It is almost an axiom that when man or beast has a regular respite from labour, his health and strength are invigorated, and he is thereby enabled to execute more work from year's end to year's end than when he works every day consecutively.

The masons of Paris have no trade union to assist in maintaining wages or regulating the hours of labour, such as exist in England: but I learned that they have a secret society, that is, one not sanctioned by the Government, through which they are assisted while in search of employment, by means of lodges in the provincial towns, at which the members who call can learn where employment is to be had.

In almost every trade there are benefit societies, which are recognised by law, the rules of which are nearly alike; some of them include those only which belong to one particular trade. The society of carvers and sculptors, of whose rules I procured a copy, includes carvers in wood, stone, or bronze, together with modellers and pointers. It numbers about three hundred members, who pay a subscription of two francs a month each. In sickness a member receives two francs a day, for eight months, should his illness extend to that period; if not recovered by that time, he is re-examined; and if the doctor is of opinion that he can be cured, he goes on as before; and if pronounced incurable, and he has been a member ten years, he receives fifteen francs a month, and if under ten years, he receives seven and a-half francs a month, with doctor's attendance and medicine. At the death of a member fifty francs is allowed for his funeral, and one hundred francs to his wife, and if he leaves three children under age, they each receive fifty francs. The masons' society numbers about one thousand, and the marble masons nine hundred.

In 1864, the penal laws relating to the combination of workmen were very much relaxed, and since that time it is not illegal for any number of workmen to combine to advance their wages or to shorten their hours of labour: but before taking any steps to enforce their demands, they must ask leave from the commissary of police to hold a meeting, to which, when leave is granted, he will send an officer. At the meeting a fair statement of the matter in dispute must be set before the men, for any misrepresentation or exaggeration is a criminal offence, punished by fine or imprisonment; and if the men agree to cease work until their demands are complied with, a resolution to that effect is adopted, and a strike committee formed to collect funds. They must not fine, or in the slightest manner interfere with any other workmen who may have replaced them, without incurring the penalties of fine or imprisonment; and, notwithstanding all those restrictions, a strike of the workmen is, in most cases, successful, they stick so well together; and should the strike be lost, many of the men would rather work at some other labour, which may not be so well paid for, than return to work at their own trade for less wages than they struck for.

Many of the disputes which necessarily arise between masters and men are settled in the Courts of Arbitration, or Council of *Prud'hommes*, of which there are four in Paris. Each court consists of a president, who is appointed by the Government, a secretary, and 26 councillors—employers and working men—who represent the six categories into which

the industries of Paris are classified. They are elected every three years by the workmen; and every man who has worked five years at his trade, and has resided in Paris three years, is qualified to vote. There are about 12,000 cases annually adjudicated on in each court, three-fourths of which are settled. The court has the power to enforce its award to the amount of 48; but if their award exceeds that sum, either party can appeal against their decision to the Tribunal of Commerce.

I was present during a sitting of one of these courts, and was astonished to witness the simplicity and dispatch with which the business was conducted. The chairman and two councillors constituted the court, and occupied seats at a table on a dais raised off. The parties to the dispute stood in front of the rails, and when the plaintiff stated his case and the defendant replied, the chairman and the two councillors put a few questions, and consulted together for a few minutes, and then made their award. Both parties left the court apparently satisfied; and I left shortly after, impressed more in favour of Lord St. Leonards' Bill than I had been before I entered.

Marbles are very extensively used in Paris for triumphal arches, fountains, statues, &c., and very abundantly for the decoration of their buildings, externally and internally. Many of the shops have the walls inlaid, and their counters entirely constructed of choice specimens; and on the hall doors and gates, marble of different colours is used as furniture under the door-handles. But the interior of the church at the Invalides, in which the tomb of Napoleon is placed, is by far the finest marble work in Paris, when you take into account the great extent, the variety, and costliness of the materials, and the workmanlike manner of the execution. There are about 12,000 persons employed in the working of marble in Paris alone, the masons receiving from 4fr. to 6fr. a day; and not less than 60 different kinds used, 41 of which are raised in France. They range in price from 40 fr. the square metre to 1,120fr.; Italian statuary from 1,230fr. to 1,580fr. the square metre, and 10 different sorts of coloured marble from 950fr. to 1,430fr. the square metre; from Spain, two sorts, yellow and violet, at 1,070fr. the square metre; and from Belgium 5 sorts, at 420fr. to 720fr. the square metre.

Through the kindness of Messrs. Parfoury and Lemaire, who took a gold medal for a chimney-piece at the Exposition, I was enabled to visit their workshop in the Petite Rue St. Pierre, which is one of the principal for the manufacture of marble. Nothing could exceed the order and regularity with which everything is done. The masons work by the day, and the carving is done by the piece; and I have no hesitation in saying that better marble-masons than the Frenchmen I saw there never handled a tool; and as for the carving, it helped to carry off the gold medal. There was great variety in the marble and designs of the chimney-pieces in the show-rooms; but, what struck me most, there was not a single plain one, because, I was told, they could not be sold.

When our aristocracy and middle-class exhibit taste like that, it will soon create art workmen; but as long as they are content to have for a chimney-piece two pieces of marble on the end, one the edge across and another on the flat for a shelf, workmen have no incentive to improve

themselves. I believe the Society of Arts would do good service in sending a batch of them over to Paris to improve their taste; but they must take good care and send some of their members with them, or they will spend all their time in pleasure.

Unable to speak the French language, it was difficult for me to find out to what extent the working-people of Paris are educated; but the children must be at the schools or at work, for you see no Arabs in the streets of Paris; and there is another feature absent, which is worthy of remark, viz., that barefaced profligacy which infests our streets after dark, and often in the broad daylight. If persons wish to indulge in vice, they must seek it out; it is not abroad with brazen effrontery, scandalising decent women, and exposing them to insult. But, although difficult the task, I felt a wish to know something of their system of education, and with that object I went to the schools of the Christian Brothers, in the Rue de Vaugirard, to which the recommendation of the Society of Arts would have obtained admission for me; but a portion of the building was under repair, and strangers were not admitted for a fortnight. I felt disappointed, and said I was an Irishman, and would be going away the next day. "As that is the case," replied Brother Honorat, the treasurer of the institution, "I will take you through, for I like the Irish; they adhere so steadfastly to the old faith;" and when I told him I was born in the same place as Gerald Griffin, who died an eminent member of the order, Brother Honorat made me feel quite at home in the monastery, the building of which comprised the schools, dormitories, workshops, and chapel, and formed a quadrangle, the centre of which served as a play-ground. Here 850 boys, over ten years of age, were clothed, fed lodged, and educated for 1fr. a day. The school-room runs the entire length of one side of the building, has a corridor through the middle, and the spaces on either side are divided by thin wood and glass partitions; and at the extreme end is seated at a desk the brother who presides over the education, with whom the assistant teachers are in constant communication. I observed that in addition to other rudiments of education, architectural and mechanical drawing, in outline and shaded, with free-hand drawing and designing, formed a prominent part of the teaching; for those classes were large, and their labours adorned the walls of several rooms. There are examinations at stated times, when prizes and medals are awarded; and such of the boys as display an aptitude for learning are allowed to continue at it; but others who are not so inclined, when they have attained the age of thirteen years, are put to learn trades in the workshops at the opposite side of the square. Those workshops, together with the labour of the boys, are given free to small masters, who find work to do and learn the boys their trade. Gilding, carving in wood or stone, trunk and portmanteau making, shoe-making, tailoring, weaving, book-binding, astronomical, mathematical, and musical instrument-making, are amongst the trades taught there to 130 boys, who spend two hours in the workshop and the remainder at their books. In the carvers' shop there were about twenty employed, working on hard oak, but the master was engaged on a medallion bust of Mons. Lacroix, secretary to the Grand Aumonier, and four of the boys were executing figures of the Evangelist, in hard oak, which were nearly finished;

to me the expression and drapery appeared as perfect as the most skilful hands could do it. Those boys were about sixteen years old; one of them was deaf and dumb; and the father of another was a captain in the Mexican expedition. In the portmanteau-making shop one of the boys was fully instructed in the trade, and was on the eve of leaving the school, where he had been just seven years; so that for 1fr. a day he was kept educated, and had a trade in his hands to commence the world a useful citizen. I might add that many of the boys whose parents are unable to pay the entire sum for their maintenance, have the portion they can provide supplemented by donations from charitable persons or institutions. Brother Honorat next conducted me through the kitchen, where the food was cooked by steam; and through the dining-room, where the boys were at dinner, with as little confusion and noise as would attend the dining of an ordinary family. Having expressed my thanks to the treasurer, Brother Honorat, for his kindness and courtesy, and blessed my stars that I was an Irishman, or I would have missed this grand treat, I returned to the *logements*, well satisfied with my day's work.

I hope the Society of Arts will be as well pleased with this report.

COACH-MAKING.

By THOMAS MAGRATH,

COACH-MAKERS' FOREMAN.

I HAVE the honour of submitting, for the information of the Society of Arts, the result of my visit to the coach-making department of the Paris Exhibition; and taking coach-making generally as a branch of industry, there is little in its working details, compared with other branches of manufactures, requiring a more comprehensive knowledge of artistic design. The artisans employed in the manufacture of carriages have many difficulties to contend with, as that portion of the public who use carriages, often require one carriage to answer the purpose of three or four, and each one in its general appearance must be as graceful and pleasing to the eye in its altered arrangement as though it was expressly made for that purpose: therefore, it is of the greatest importance to the workmen that they should possess an intimate knowledge of drawing and mechanical appliances. And I regret to say that, in a great city like London, there are no classes or instruction given by any professional draughtsman in connection with this trade; and from what I have observed in the workshops in Paris, and also from the many drawings and sections of various parts of carriages, admirably executed, in the Paris Exhibition, I must confess that our French fellow-workmen have greater facilities for obtaining a more scientific knowledge of the construction of a carriage than the English workman.

I have noticed also that their system of work is different from ours. Their wood-work generally is very heavy, and, as a general rule, is not so neatly put together as ours, except in one establishment, where the work of the body was as well finished in every respect as could be desired. I was very much surprised at the great quantity of heavy iron-work in the bodies; the edge-plates of a brougham were much heavier than what an English coach-maker would put in the largest landau. I think that if one of their light broughams was weighed when finished, and compared with one of ours, there would be a great advantage in favour of an English one, as to lightness; although some of the French ones look very light in appearance, they must be heavy in actual weight. I consider the arrangement of the smith's shop a desirable one; every carriage is completed in all its details, as to the making and fitting of iron-work, before leaving, saving a great deal of time, and giving the workman greater facilities for finishing and

adjusting his work with greater nicety of finish, which is one of the principal features of French coach-building.

The iron work, generally, is of superior finish; and what I have seen of the forging, in its rough state, was creditable. There seemed to me to be a great division of labour, and a great many mechanical appliances employed in stamping and ornamental iron work; and from what I have been informed, as to the rate of wages paid to the class of men engaged in this branch of the trade, and the privilege of working seven days a week, the extra day making up the deficiency in wages, I am of opinion that the French coachmakers can produce carriages cheaper than the English manufacturer.

In examining the carriages exhibited in the French department, I was surprised to find that the majority of them were copies of English construction, especially in the under-carriages; with this exception, that theirs was a great display of unmeaning curves and sweeps introduced in the iron work; crowding the carriage without any advantageous results as to improvement or durability, and destroying the gracefulness of outline which is essential to a well-constructed carriage. This overloading of the carriage with a quantity of useless iron work would appear to me to be a characteristic feature in the manufacture of French carriages, from its being so generally adopted. There is also a very great deficiency of taste in the lines of the bodies, their mouldings being very heavy, and the outline of shape possessing no claim to gracefulness whatever; giving a heavy, clumsy appearance, and not in proportion to its under-carriage, which is generally so light.

In painting, some of the work was well finished; and one carriage, exhibited by Lelorieux, where imitation of bamboo cane was painted on the door panels, was a beautiful specimen of workmanship. There was also a brougham, by Million, Guist, and Co., hung on a perch and platform springs, and without the usual braces; the body attached to the carriage by a light spring, a novelty in its construction, and deserving special notice for its superior finish, in all its details, and good taste displayed in its painting and trimming. I was disappointed in respect of the baronches, having always supposed that that description of carriage was superior to all of French manufacture; that the head, when down, had the great advantage of being perfectly flat; and certainly, to an unprofessional eye, it had that appearance; but this was more than counterbalanced by a sacrifice of the depth, at the point nearest the door produced by the elevation of the standing pillar and neck-plates of head. The effect produced by this arrangement destroys that lightness of panel, which is an important point to be gained in the construction of the park baronche; and which is so admirably arranged in the baronches exhibited by the firms of Peters and Sons, and Hooper and Co. of London.

In reference to the chariots exhibited by three of the leading French firms, and which I may state is a leading article of the London coach-builders, I have little remark to make beyond this: that it has given me an opportunity, which I never had before, of comparing the heavy work of the two countries. I give great credit to the French manufacturers for what they have exhibited in this particular branch of coach-

making; but most certainly the London builders are not to be surpassed in the construction of a chariot, the best of the French chariots, in my opinion, being the one exhibited by Binder; but all three of the bodies are deficient in beauty of outline, and heavy in appearance.

The landau hung on C and under springs, with iron perch, exhibited by Binder, is as near a copy of Peter's, of London, as could be made, except that the front loops and seat have not that same easy curve which is peculiar to their C-spring landaus. The head of this carriage falls in a good line, and in painting and trimming is essentially English, and well made. I have not seen any effective appliance for opening and shutting landau heads, that requires any special notice, applied to the French landaus. But their several arrangements for opening the door-glass by the unlocking of the door, and so preventing the breaking of the glass by attempting to open the door when the window is half up, seemed to work well. How far it may be effective in its working after the carriage has been used a short time, and settled to its bearings, I have had no opportunity of judging. But, having seen one in the course of construction, it seemed to be very complicated, and would be awkward to adjust, if out of repair, in any part of the country where an artisan would be difficult to get. I have observed several descriptions of steps arranged to open and shut with the door, all well made, and working well; but there was one great objection to their use in a general way—they were liable to make a deal of noise. Indeed, some of them rattled a good deal already, which of course would increase by the vibration of the carriage at work, and be a source of annoyance; they were all ingeniously contrived and well put together, but, as far as my experience goes, would not be suitable for English carriages, for the reason stated.

A mail-phæton, by Delaye and Co., hung on iron perch and C springs, was deserving of notice for the excellent forging of the perch and wings in the solid iron, and also for the vice work and finishing, exhibited without painting; a very good specimen of iron work. The state-coach by Kellner was tastefully got up, and I think that description of work is more in keeping with the fanciful devices of the French workman, the trimming being well finished, and with great artistic taste. Indeed, all the trimming generally is of a superior description. It may hardly be worth while to mention the drag of M. Belvallette. I think there cannot be any difficulty in discovering where the original design came from, an eminent London firm having sent a great number of that description of carriages to Paris. I should have liked to have seen some new and improved designs from our French neighbours instead of copies.

I have now given the principal points that attracted my notice in the French department; and I may close this portion of my report by remarking that there seemed to be a great deal of attention given to trimming, in the introduction of little tasteful fittings in the inside of the carriages, which I think forms a distinct branch of trade in Paris, and which are neatly arranged, and give a certain appearance of usefulness and elegance to the interior, and which I have had myself great difficulty in procuring in London, and at a very high price compared with what is charged in Paris.

The carriages exhibited in the Italian Court were excellent. The boat-shaped landau, by Casalini, of Rome, hung on elliptic springs, was a good specimen of workmanship, as also the landau hung on C and under springs, with the iron perch, which could not be surpassed by any carriage of the same description in the French department, the construction of its under-carriage being very well arranged. The body also was of the latest design, the outline of shape being easy and graceful; well painted, and trimmed in good taste. I had some doubts in my mind as to whether these carriages were not of English manufacture. A barouche by Locati, of Turin, was also deserving of notice, as being a good and well-finished carriage. The iron work especially was well made, and also well painted. The Italian workmen, I have no doubt, possess a good idea of outline, judging from these specimens.

Siewers, of Berlin, has a landau, the head arranged to open and shut by a lever worked from the coachman's seat. It worked well, but required a good force to work. I think there is one objection to the use of these appliances when worked by the coachman—that they are likely, by taking his attention from the horses in a crowded street, to cause an accident. I am of opinion that Rock's principle of working landau heads is better. There is less iron work and more simplicity, and not so easily disarranged, besides possessing the advantage of opening or shutting from the inside.

In the other foreign departments where carriages were exhibited there was nothing requiring any notice on my part, all being much of the same, and without any novelty. I may mention Russia as an exception, as I have found a great improvement in style and workmanship in the carriages exhibited over those which were sent to the English Exhibition in 1862; and the travelling-carriage by Nellis, of St. Petersburg, well deserved the silver medal which was awarded to the builder for good substantial work, the travelling arrangements and fittings being compact and useful, and well constructed for the purposes for which it was intended. I do not think I have any further remarks to make in the foreign departments, and will now submit a few on the English section of the Exhibition; and in expressing those opinions, I have not the slightest intention of giving any offence, and only hope to fulfil the position in which I am placed, by endeavouring to give a fair and impartial report of all carriages exhibited by every country.

Taking the English department in a general way, I may state that they are fair specimens of what English workmen produce every day from their workshops. Plain, simple, and useful, not constructed for show, but for useful purposes. It may be observed, perhaps, by the visitors to the Exhibition, that the English carriages did not look so fresh in their painting as the French. It must be remembered we had to unpack our carriages in the building, during the preparation for the opening of the Exhibition (which under ordinary circumstances of exportation would not in any way injure a well-painted carriage), while the French manufacturers sent their work fresh painted and direct from their workshops. And notwithstanding this advantage, which for the purpose of exhibition was decidedly favourable to the French, comparing one carriage with another, I submit we are not surpassed in branch of coach-making. In the trimming department there is a gr

difference in the taste of the respective countries; and in examining those carriages that were trimmed in the English style, I see no marked difference in workmanship; on the other hand, I must give to the French workman the merit of being the best in ornamental and fancy trimming.

The landau exhibited by Offord is a very good specimen of trimming, but the lines of the body are bad. There is a good piece of iron-work in the front-carriage, but it has this disadvantage, that if an accident occurs, the greater part of the iron-work must be removed, which creates unnecessary expense in repairing.

A landau, by Woodall, is also deficient in an important point,—the head not having sufficient room to fall in the front-boot without resting on the panel, the head being prevented from falling flat thereby.

Rock, of Hastings.—Landau, fitted with his patent head, is a well-made piece of work, but the elbow-line of moulding is much too heavy. The head works easily and effectively, exhibited without painting or trimming.

The landau by Wyburn, hung on iron crains, is a very compact and well-finished carriage in all its arrangements; also a phaeton by the same builder, well finished.

The segmental brougham, by Cole, of Kensington, is a good specimen of an English brougham, and well finished: but I think there is rather too much colouring in the lace, which did not harmonise with the lining; and less plating would, in my opinion, give a better effect to the general appearance.

Leall and Large's single brougham was neatly finished, and in its general detail well arranged. Of elliptic-spring barouches, Macnaught and Smith, Worcester, exhibit a very light one; the iron-work well finished, and a good shaped body; but the whole arrangement is destroyed by the bad construction of the front-seat and foot-board, a great mistake being made in cramping the leg-room.

Davies and Sons, Wigmore-street, exhibit another of those elliptic barouches, and which, I think, is the best of that class of carriages.

A C and under spring barouche, exhibited by Laurie and Marner, I can hardly class as an English style of barouche, there being a good deal of French imitation in its arrangements; a little too much carving about the wings and some part of the iron-work, bad taste in the selection of the lace; and the broken line of the coachman's seat is out of all order: otherwise well finished.

Cockshott, of Manchester, has one of those C and under spring barouches, which is of good workmanship, except that the line of the perch is not so pleasing to the eye, in consequence of the front end being curved, and does not follow with such good effect the front line of the body. There is a different kind of hinge from what is generally used introduced in this body, which may be advantageous where an outside door and cover are used, by allowing the door to open in a straighter line than could be obtained by the usual concealed hinge.

The barouches exhibited by the firms of Messrs. Hooper and Co. and Messrs. Peters and Sons, may be considered more in accordance with English taste, being simple in their construction, plain, and well finished in their details; the outlines being easy and graceful, give that idea of comfort which is essential to a well-finished barouche.

The four-horse drags exhibited by the above firms are of all others the most thoroughly English in character; and to maintain the prestige of the drag, we must closely adhere to the opinions of the old coaching connoisseurs. The coachmaker, in constructing a drag, has not so much scope for his ingenuity as he has in the manufacture of other carriages. The purchasers of drags being a select class, each one having his own particular fashion, it follows that he has to work to that particular style which his customer orders, and can only introduce such improvements in its fittings and appointments as will make it in accordance with modern taste, and without materially altering its English character. I now have to describe the appearance of Messrs. Hooper's drag; but how far rounding the corners of the box-seat may detract from the comfort and coaching appearance it will be for the public to decide. I consider it a well-made, substantial carriage: the fittings and appointments are well arranged and suitable for coaching purposes, in good style, and of the best material, answering all the requirements of a well-appointed drag.

In reference to Messrs. Peters' drag, I have little remark to make as to its qualifications, it being of plain substantial workmanship, and of the best description; the fittings being well arranged and serviceable, with a novel and effective lever-break, so arranged that it can be worked from either the front or hind seat at pleasure; and taking all its arrangements into consideration, and its general coaching appearance, I think the jurors have made a proper award.

I have now given a general review of all those carriages which were worthy of notice in all the departments; and to all I have given a careful examination, and have endeavoured to give an impartial report. In submitting the results of my experience, both in the Exhibition and in the workshops of Paris, and having particularly noticed the work in course of construction, as well as what was finished in the show-shops, I am of opinion that what was exhibited by the French employers was of their best description, got up expressly for that purpose, and not in the ordinary way of trade. I think the artisans have a more mechanical idea as to working from scale and drawing, but are deficient in taste as to gracefulness of outline, and do not construct their work with such effectiveness and durability as the English. But at the same time, I give great praise to our French friends for their ingenuity, and for the friendly way in which I was received by them in their workshops, and for which I am thankful. But, I must confess, I see nothing yet to tarnish the reputation of English coach-builders.

In concluding this report, I may have introduced subjects unsuited to its objects, being inexperienced in writing official reports; but I trust to your kind considerations for any error I may have committed. And I may be permitted to return my grateful thanks to M. Haeseuillier, the gentlemen comprising the committee, and the officials connected with the British Workman's Hall, for their courtesy and kindness in affording me any information that I required in the furtherance of the object for which I was sent; and I shall feel honoured if this report of a working man meet the requirements intended, and the approval of your Council.

SHIPBUILDING, &c.

By E. F. MONDY,

SHIPWRIGHT, R.M. DOCKYARD.

HAVING been selected to visit and report upon that part of the Paris Exhibition having reference to my particular trade, "shipbuilding," I have drawn up the following report as the result of my observations.

On my first visit to the Exhibition, I made it my duty to find out where the several portions of Class LXVI. were situated, and in doing so I was very much surprised by the scarcity of work connected with that class, with the exception of that sent by England, which was very good and plentiful.

France is the next best represented; but although she sends few models compared with England, her navy is nearly as well represented.

America, although well-known as a nation noted for its shipbuilding, has very nearly neglected this class.

As France and England are the two best represented in this class, and are the two countries which attract the greatest amount of attention in the Exhibition, I shall confine myself more particularly to them in my remarks.

The chief features to be noticed connected with shipbuilding in this Exhibition, which have not been represented in previous exhibitions as prominently as in this, are the adoption of steam propulsion for ships of both commerce and war, and the use of armour-plating for ships of war.

From what I could ascertain by inquiry, the chief aim of the French Government is to secure as much as possible a more uniform fleet than the English, whose fleet is composed of vessels of various types, each vessel having particular qualities adapted to the particular service for which it is intended. This would well account for the few models exhibited by the French, as compared with those exhibited by the English.

The principal vessels represented in the British section are the *Warrior*, *Bellerophon*, *Hercules*, *Achilles*, *Northumberland*, *Monarch*, *Captain*, and a few others, which I shall mention in passing along. Of the above-named the five first are on the broadside principle.

The chief novelty in the *Warrior* is the fact of her being the first English iron sea-going armour-plated ship of war. She was built by the Thames Iron Shipbuilding Company, in 1860; her protection is amidships only, the fore and after parts of the ship (to within a few feet of the

water-line) are unprotected, and could be carried away without doing her any fatal injury.

The *Black Prince* was built on the same, and the *Achilles* on nearly similar, lines as the *Warrior*. The *Achilles* was built at Chatham-dock-yard, in 1863. Her protection is very different to that of the *Warrior* and *Black Prince*; her armour-plating extends right fore and aft, being diminished in thickness towards the extremities of the ship; her armour amidships is 4½ in. thick. She carries twenty 6½-ton guns, is 1,250 horse-power, 380 ft. long, 58 ft. 3½ in. broad, and 6,121 tons burthen, having a speed of 14½ knots per hour.

The *Northumberland*, *Minotaur*, and *Agincourt* (three sister ships), are the largest in our navy, their length being 400 ft., breadth 59 ft. 4½ in.; tonnage, 6,621; draught, 23ft. 1 in. forward, and 24 ft. 1 in. aft. Their complement of men is among the greatest (the *Achilles* only having the same), viz., 705. Their armament is much more, both in number and weight, being 50 guns, consisting of twenty-six 60-pounder, fourteen 110-pounder Armstrong, and ten 70-pounder Armstrong. Their framework and general construction are very similar to those of the *Warrior* and *Achilles*.

Next we notice the *Bellerophon* and *Hercules*. The *Bellerophon* was built at Chatham-yard, and, being the first of her class, she attracted a great amount of attention while in course of construction. The chief difference between this and formerly built iron ships of war, is the formation of a double bottom and the water-tight compartments formed by the inner and outer bottoms and the water-tight frames, which are spaced about 20 ft. apart. The wood-backing is worked differently. In the *Warrior* it is worked in two thicknesses, one longitudinally 10 in. thick, the other vertically and 8 in. thick; while in the *Bellerophon* it is worked in one thickness of 10 in. longitudinally, having continuous iron girders placed between the strakes of backing. These girders are formed of an angle-iron of about 3½ in. by 3½ in. by ½ in., the deep flange being ½ in. less than the depth of backing, the narrow flange being rivetted to the skin-plating. She is short in proportion to her breadth, as compared with other large armour-plated vessels, her length being 300 ft. and breadth 56 ft. 1 in.; her tonnage is 4,279. She has a ram bow, called the U bow; also a new form of rudder, called the balance-rudder, in consequence of which there is no rudder-post. The rudder is supported chiefly by rollers at the head of the rudder, the rest of the support being a large plate slightly hollowed, and leading from the under-side of the keel to the heel of the rudder. There being but very little weight of the rudder on this, admits of its being made much slighter than might be expected.

The *Hercules* is very similar in the construction of her framework to the *Bellerophon*. The object aimed at in the *Hercules* was an increase in the thickness of her armour and wood backing. To gain this the wing passage was made smaller, and filled in with wood backing in the wake of the water-line. The armour plates were increased in thickness from all 6 in. to 6 in., 5 in., and at the water-line 9 in. The ports are narrow, and are recessed, so as to permit the training of the gun, as are also those of the *Research* and *Pallua*.

We next notice our wooden armour-plated vessels. Among these the most noted are the *Lord Warden*, *Lord Clyde*, *Royal Oak*, and *Royal Alfred*; but as this class of vessel does not occupy a prominent position in our navy, and their qualities are generally well known, I shall not in this report make any special notes upon them.

We now come to our "turret ships." Under this head we have the *Monarch*, *Captain*, *Royal Sovereign*, and *Prince Albert*.

The *Monarch* and *Captain* are the two principal turret ships of our navy. The *Monarch*, now in course of construction at Chatham-yard, was designed by the Controller's Department. Her framework is very similar in construction to that of the *Hercules*, but her armour is not as heavy, being 7in., with the exception of the lower stroke, which is only 6in. A portion of her upper deck is flat, to allow the turrets to work. Her armour-plating extends from a few feet below the water-line to the upper deck, in the midship battery, and right forward, where it forms a vertical, curved bulkhead across the ship. The foremost part of this bulkhead is about 16ft. abaft the stem, and it runs about 16ft. further aft between the main and upper decks. With these two exceptions, the armour is carried as high as the main deck. The topsides above this are formed of bracket frames and thin plating, the frames being secured to the main deck. Her wood backing is the same thickness as that of the *Hercules*, but she has none in her wing passage. Her length is 330ft.; breadth, 57ft. 6in.; tonnage, 5,100; speed, 14 knots (estimated).

The *Captain* is rather smaller than the *Monarch*. She is being built by Laird and Co., and was designed by Messrs. Laird and Captain Cowper Coles. Her construction is very similar to the *Monarch*. The unprotected parts of the topsides in this vessel are made to fall down when required. The extremities, as well as the midship battery, are protected as high as the upper deck. This deck is therefore discontinued between the battery and the extremities. Her length is 320ft.; breadth, 53ft. 3in.; tonnage, 4,272; speed, 14 knots (estimated). It will be noticed that neither of these vessels has a direct line of fire in the direction of the keel from the turrets.

The *Royal Sovereign* is built of wood, and was formerly meant for a line-of-battle ship, but was afterwards converted into an iron-cased turret-ship. Her length is 240 ft.; breadth, 42 ft. 2 in.; tonnage, 3,765; horse-power, 11 knots per hour. This, as well as the *Prince Albert*, *Scorpion*, and a few others, are more particularly meant for coast defence.

There are a few other vessels worthy of notice, as they possess some rather peculiar features, viz.,—the *Viper*, *Vixen*, and *Penelope*. These vessels are remarkable as having twin-screws, with double sterns; each screw has a separate stern-post and rudder. Between the two posts the buttock is formed like an arch, looking very much like two sterns joined together.

Also the *Waterwitch* is particularly remarkable for being double-ended, having a rudder at each end, and also for being propelled by the hydraulic principle. The speed obtained by this vessel is 9 knots per hour, and that of the *Penelope*, *Viper*, and *Vixen* is 12 knots per hour.

I now come to the French models. The chief types exhibited here are the *Marengo*, *Solferino*, *Alma*, *Gloire*, and *Flandre*.

The *Marengo* has a wooden hull. She is armour-plated in wake of the water-line, and in the central battery the plating extends to a little above the upper deck. She is about 270 ft. long, and 57 ft. broad, and has a draught of 28 ft. She has a balance-rudder, the fore side of which is shaped so as to clear the boss of the propeller, which is brought to a point, for the purpose of freeing the dead-water, which might otherwise accumulate. She has a turret at each corner of her battery, each having a fire in a line with the keel. Her bow is intended for a ram. Her armour is 8 in. thick, tapering towards her extremities. Each of her turrets carries one gun, and she has four guns each side, making a total of 12 large guns. Her engines are 980-horse power; and her speed is estimated at 14 knots per hour.

In most of the French models the shrouds are brought on the inside of the ship, but in this vessel they are not only brought on the inside, but are carried as much as 5 ft. on the deck, leaving quite sufficient room for the stowage of such requisites, as boats, &c., between them and the topsides. Thus, in most French ships a thorough clear side is presented.

The *Solferino* is a wooden, armour-plated vessel. She is plated round the water-line, and has a central battery, having two decks, each carrying guns. She is 1000-horse power, has a 6-bladed screw, with a speed of 14 knots (estimated); her armour is 4½ in. thick, and the complement of her armament is 50 guns.

The *Alma* has the lower part of her hull of wood, and all the upper part of iron. She is armour-plated at the water-line and in the mid-ship battery; the plating tapers in thickness at the water-line towards the extremities of the vessel. Her armament is to be 12 guns. Her engines are 450-horse power, having a twin screw, both working on the same shaft. Her speed is 12 knots per hour (estimated).

The *Gloire*.—I believe this vessel was not at first intended for an armour-plated vessel, but after partial construction was cut down and converted into one, being plated at the water-line and in the battery. Her length is about 280 ft. Her plating, which is 4½ in. thick, diminishes towards her extremities. Her displacement, 5,650 tons; engines are of 800-horse power; speed, 13½ knots per hour. Her armament consists of 28 guns.

The *Flandre* is rather smaller than the *Gloire*, but her armour is heavier, being 6 in. thick. Her engines are of 2000-horse power, having a speed of 14·3 knots per hour. Her armament is 28 guns.

The following is the number of vessels in the French fleet having the same armament, thickness of armour, and speed as those above named:—

<i>Marengo</i>	.	.	.	.	.	3
<i>Solferino</i>	.	.	.	.	.	2
<i>Alma</i>	.	.	.	.	.	8
<i>Gloire</i>	.	.	.	.	.	2
<i>Flandre</i>	.	.	.	.	.	5

They have many others in their iron-cased fleet, but most of them are much smaller than those given.

The French have several coastguards, which are illustrated by a few models. There is also a very peculiar ram, called the *Bélier*. She has very sloping sides, resembling very much the form of a cigar. Her armament and means of attack are a single turret, carrying two guns. She is armour-plated about the water-line, having 6in. armour-plates; the sides are also plated, but the plating is reduced for this purpose. Aft of the turret a short deck is carried, butting against a bulkhead which terminates the sloping sides. She has a sharp metal peak at her bow, to serve as a ram. Her engines are of 530-horse power, working twin screws, giving a speed of 13 knots per hour.

There are two types of floating-batteries, called *Arrogante* and *Embuscade*.

The *Arrogante* carries 10 guns in her battery, which is plated with 4½in. of armour. She is also plated right fore and aft about her water-line. She has a deck before and aft of the battery, a little above the water-line, the edges of which are rounded off flush with the outside of the armour. Her speed is 7½ knots per hour.

The *Embuscade* has 4½in. armour-plating, armament 8 guns, and speed 7 knots per hour. Both of these batteries are very broad and flat-bottomed. Their engines are of 120-horse power, carrying twin screws, each screw having 4 blades. The *Arrogante* has a round stern, while the stern of the *Embuscade* forms an angle at the middle line, and is such that its horizontal sections have the form of a Gothic arch.

Among the other vessels exhibited, the most peculiar is the Spanish armour-plated screw-ship *Numancia*. She is entirely built of iron, was built in France, and has 5in. of armour-plating, with 16in. of wood backing from the fore to the after end of the ship, and extending from about 6 or 7ft. below water to the upper deck. She carries 40 guns, has engines of 1,000-horse power (nominal), and has a speed of 13 knots per hour. She has a straight stem; her length is 300ft.; breadth, 57ft.; tonnage, 7,500.

The Thames Iron Shipbuilding Company exhibits some very good models of foreign vessels; viz., the Prussian frigate *Wilhelm I.*, and the Spanish frigate *Victoria*, with one or two others, all of which are completely armour-plated.

The Russian Government exhibits some very good specimens of modern ships of war, among them are the iron-clad *Sebastopol*, *Smerch*, and the *Metrone Menia*.

Austria also sends a few models, but, with the exception of those pointed out, there are none possessing features worthy of notice.

I now pass to some fresh improvements shown in the Exhibition, the most of which are by English exhibitors.

The chief features for remark are steering apparatus (both with respect to the form of the rudder and mode of working it), anchors, and propellers.

In the first place we notice Lumley's patent rudder, as the first deviation from the old style of rudder. It is used in many vessels, both in our navy and ships of commerce. This rudder consists of two pieces

hinged together, and working similar to folding doors. The fore or main piece is hung on the post in the usual manner. The object aimed at is to have (in all positions of the rudder) the after-piece to make the same angle with the fore-piece, as the fore-piece does with the middle line of the ship. This is effected in three ways:—

1st. By means of a chain passing on each side of the main-piece, to the opposite sides of the after-piece, to which the after ends of each chain are made fast, the fore ends being secured in the stern of the ship.

2nd. By means of the after-piece having a head (similar to the ordinary rudder head), at the top of which a groove is placed. This groove is formed by a flat bar of iron, with the groove cut out of its middle, and nearly its whole length, it being cut large enough to admit it to work freely over a pin which is fixed in the middle line of the stern, so that when the rudder is amidships, the pin is at the after end of the groove, which also stands direct fore and aft.

3rd. By means of a bar made fast to the post on one side of the rudder, and passing to the other side of the after-piece of the rudder. This is shown in two ways: first, by having a single bar at the top of the after-piece; in this the bar is straight, and the after-piece has a lead, as in the last case; second, by having a bent bar on each side of the main-piece, the bent parts allowing them to pass through to the other side of the after-piece. These bars are placed about the middle of the rudder.

In all these systems the after-piece is worked by the motion of the fore-piece, and should the after-piece get deranged, it is quite possible that the fore-piece may be in working condition.

The principal objections to this plan are, the great increase of friction, the greater risk of derangement (although to a great extent this is modified by the probability of the after-piece forming a protection to the main-piece), and also the greater strain on the rudder-head. But for these, the plan is a very good and effective one.

The rudder most usually adopted in large vessels is called the balance-rudder. In this case there is no rudder-post used, the rudder being chiefly supported at the head on friction-rollers. These rollers are frustums of cones, the vertices of which meet in a point. There are about eight in number, being placed equally distant round the head, and resting between two plates made to fit the rollers. The support at the heel of the rudder is made by a large plate, slightly hollowed; it is about 1½ inch thick, but very broad, as there is great lateral strain. As in this form of rudder the axis passes at about 1-3rd the breadth of the rudder from the fore-edge, it is very easy to work, there being only about half the work to overcome that there would be in an ordinary rudder of the same size. The *Hercules*, *Monarch*, and *Pellegrin*, built at Chatham-yard, are fitted with these rudders, together with a few others built at other yards and by contract.

There are many methods shown for working the rudder. These now used are the tiller in small craft, and "wheel apparatus" for large vessels. But there are many mechanical methods exhibited for effecting

the same purpose. The best of these are by Napier, Money Wigram, and Huxhams and Brown.

Napier's method consists of a wheel working a bar, carrying two reversed screw-threads. These screws work two nuts, which slide horizontally along two bars, one on each side of the screw-bar. The two sliding bars are secured in gudgeons at each end, but the screw-bar is only secured so as not to allow it to move in any other manner than revolving freely on its own axis. The two nuts, one of which slides forward, and the other aft, by the revolution of the screw-bar, are connected to equal arms of a lever on the opposite sides of the rudder-head, which give motion to the rudder as required. When the nuts are in contact, the arms of the lever are athwartships and the rudder amidships.*

Messrs. Money Wigram's plan is worked by means of screws similar to the above, but is particularly remarkable for the fact that the wheel and compass may be moved to any part of the vessel, as the screws are worked by means of spur-wheels and chains, which are connected with the steering-wheel. This is a very great advantage in iron ships, as there is a greater quantity of iron about the stern, which affects the compass.

Messrs. Huxhams and Brown exhibit a method worked by means of a pair of reversed screws crossing each other on the same bar. In this case two half-nuts work on this bar, passing each other freely, and sliding horizontally by means of bars on each side, as before. These half-nuts are connected to the arms of a lever on the rudder-head, which work the rudder in the same manner. The rudder is amidships when the nuts are together.

A French exhibitor, Mons. Artige, exhibits a method very similar to Napier's, the principle of working being precisely the same.

Mr. Skinner also shows a plan which, I believe, would be very good and effective for small craft, but it would be too large to be useful for large vessels.

ANCHORS.

The principal one among these is Martin's self-canting anchor. This is particularly remarkable for the fact that it is not welded in making, as the stock, shank, and arms are made in separate pieces, and may be taken apart and put together at pleasure. The stock and arms are not put across each other, but are in the same plane. The arms are made to swing freely for about 20 degrees on each side of the plane of the anchor, so that the flukes are the first to touch the ground; and as they are directed towards the ground, they take very readily. This anchor has not only been applied to English vessels, but I also saw one in use on board the French man-of-war *Serone Napoleon*, and I have no doubt it is used on other vessels.

David et Cie. exhibit a plan on the same principle, but much more complicated with respect to the canting.

Rodgers' anchor is also a very good one, but I know of nothing connected with it to merit particularising.

* An arrangement is secured in event of any derangement or extra strain, that by means of a loose wheel or drum on the fore-side of the steering-wheel, it may at once be connected with a rope passing over the drum in the usual way.

Mr. Glover gives a method of letting fall the anchor, so as to force itself into the ground at first impact. This is done by two small chains, made fast to the ordinary cable at one end; and the other ends, by means of a loop in each, are made to hold one fluke of the anchor, thus holding the anchor in a vertical position. The stock is horizontal, and the flukes vertical, and therefore, by its own weight, the anchor is forced to enter the ground.

PROPELLERS.

The chief system of propulsion used in steamships is the screw, and this is shown in many ways. Formerly the two-bladed screw was universally used, but of late twin-screws have been adopted in many of our gunboats and other small vessels, both for war and commerce. The twin-screw system has not as yet been adopted in any of our large vessels, but by viewing the French models we see it used for both large and small in their fleet. They also use a single propeller, with three, four, and even six blades; a plan which, I believe, has not been adopted in any of our vessels in the navy.

The screw, when used as an auxiliary, is fitted so as to lift up on deck, or so as to be disconnected from the engines, and so revolve freely when the ship is under canvas only, in order to give no resistance to her motion. There are many ways shown for effecting this purpose, without raising the fan on deck. In many of the French vessels may be seen a propeller, with two fans on the same shaft, each fan having two blades, which are made very narrow, so as to be sheltered by the post. The French also give a method of covering the propeller. This is done by two plates sliding down, one on each side of the post: the blades must in this case be very narrow.

The method of feathering the screws seems to be entirely left in the hands of the English, who seem to take it up with great interest. There is a very good method of feathering the screw given by Messrs. Maudslay and Son, and one given by Mr. Eames, for disconnecting the propeller from the engines. Both of these, especially the former, are particularly worthy of notice.

There are a few more methods given for propulsion, working both horizontally and vertically. Mr. Evelyn gives a method working vertically. It consists of a flat plate, sliding up and down a vertical post. The plate is equally inclined to the post in the up and down stroke. The plate cuts itself by virtue of the pressure of water on its surface. The plate is checked from coming into a vertical position by a part of the front edge of it coming in contact with the post. This propeller is particularly remarkable, as serving for a rudder as well as propeller. The steering-power is gained by turning the post round on its own axis and by turning the post through a semi-circle (thus bringing the plate on the after-side of the post) the motion may be reversed. The only objection to this plan is the severe shaking of the ship, caused by the reversing of the vertical force: in the up-stroke the vertical force tends to depress the ship, and in the down-stroke to raise it. The horizontally resolved part of the pressure on the plate is the propelling-power.

Mons. Lambert, a French exhibitor, gives a very good system for a

horizontal propeller. It consists of two flat plates working in horizontal slides, and is so arranged as to cant (in the back stroke) on its flat surface, thus giving but very little resistance to the motion. By a little mechanical contrivance, which I could not exactly understand, the motion of the vessel is easily reversed.

Mons. Guerbigny-Germenil also gives a system for horizontal propulsion. This has the advantage of obtaining a long stroke from a short stroke of the engine, by means of a lazy-tongs arrangement; but this is very complicated, and has much more friction.

Italy also gives a plan for horizontal propulsion. This works on the middle line of the ship. The flaps resemble two swinging-doors; but unfortunately it was secured, so as not to be worked. Italy also gives a method for horizontal propulsion, consisting of two horizontal wheels, the centres of which are a little within the side of the ship, thus presenting rather less than half of each wheel to the water. They are placed in midships, and are formed like a star, each spur being about one-third the radius in depth, the sides of which are equally inclined to the radius from its extremity. There are about 16 spurs to each wheel. I think this is a very good improvement on the ordinary paddle-wheels, as they are entirely under water; and it would be still better if, instead of the spurs, the ordinary flaps were used.

There is an entirely new system of propulsion exhibited in the *Water-witch*, called the hydraulic propeller. In this method water is taken in through her bottom, and is then thrown with great velocity in an opposite direction to the motion of the ship by a wheel resembling in form the wheel of a centrifugal pump. The motion is produced by the water being thrown backwards, on the same principle as the motion given to a boat by a person throwing a heavy weight from him.

In none of these methods do I see anything better than our present screw system, for I think none would give a greater velocity with the same horse-power; and I am quite certain there are none more simple or better protected. The only good I can see in exhibiting them is the novelty, and to give a basis to work upon for propellers, which may supersede the screw or paddle.

COMPOSITE VESSELS.

Lloyd's registry has sent an excellent set of drawings, illustrating the suggestions proposed by them for the construction of composite ships. The principle here shown is to form the whole of the framework of iron, the frames being completely connected by stringer-plates running the whole length of the ship. These plates are about 1 ft. to 1 ft. 3 in. wide, and are placed in wake of the decks, being rivetted to every frame. Their beams are also of iron, being rivetted to the frames; they have stringer-plates, which run the whole length of the deck, about 1-3rd the width of the ship apart. They also propose to have narrow plates crossing each other diagonally on top of the beams (where practicable), thus forming a regular tie to all the beams. The frames are also connected by rider-plates on the outside, which form a similar tie for the frames. There are several other ties given to the framework, thus giving it the complete form of a ship, being all but watertight. This framework is

then covered over by planking, which is fastened to the frames by short bolts, having a nut and screw on the inside; these have to be metal for a certain height.

There are several notes on the drawings respecting the rules for their construction, giving the height of elm plank, metal fastenings, &c. Their drawings also illustrate different forms of keelsons, and the methods of connecting the floors to the keel and keelson. There are also some drawings of different kinds of topsides, both of wood and iron, giving also different kinds of chain plates.

SHEATHING SHIPS' BOTTOMS.

Since the introduction of iron ships this has been an important subject, as the iron of a ship's bottom fouls to a very dangerous extent, and as copper and iron undergo a galvanic action when in contact with the sea-water, whereby they very soon become very much injured. It would be useless to copper the bottom of an iron ship without some insulating substance between them. There are many methods proposed to prevent this fouling. Some propose to copper the bottoms, and have an insulating substance between them. Others propose paints for covering the bottoms, without using copper at all. Mr. J. H. Ritchie, Mr. Muller, and Mr. James, of the British department, and M. Roux, of the French department, propose different methods for insulating the copper and iron. There are also other French inventors who propose plans for preserving iron ships' bottoms.

Mr. Daft gives a method on quite a different principle to the above. He proposes to partially cover the bottom with zinc. His idea is to have a voltaic action between the iron and zinc, so as to cause the zinc to undergo a regular corrosion, similar to the copper in wooden ships. To increase the voltaic action, he leaves a portion uncovered, so as to give more connection with the sea-water.

Mr. Hay and Mr. Gisborne propose paints for covering the bottoms of iron ships, without the use of copper or zinc.

BOLTS FOR ARMOUR PLATING.

The French and English Governments differ very much in the methods of fastening their armour plates.

In the French service the plates are fastened by large high-pitched screws. These screws have only one thread, resembling a bar with a strip of iron (having a triangular section) wound round it, leaving about half an inch of the bar between the threads. In the model I saw illustrating the method of fastening the armour, there were two thicknesses of wood backing, one vertical and the other horizontal. The vertical backing was put between the frames; it is put in in three pieces; the two pieces next to the frames are kept in place by the outside angle-irons, the middle piece is put in in the form of a wedge, the section of it being the frustum of a wedge. This is fastened by bolts, with a nut and screw on the inside, having an iron plate for a backing. They are put vertically up and down this middle-piece, and about two feet apart.

Over this the longitudinal backing is put, being fastened to it by treenails; the armour is then put over this, and the screws are long enough to take a good hold of the vertical backing. The screws are put much closer together than the bolts in our fastening. From the appearance of the surface of the screws, I should think the thread is wrought on the bar, instead of being cut on by a screw-cutting machine, which would make it much stronger, as the long fibre of the iron would not be broken.

In the English service the armour-plating is fastened by large bolts passing through the plates, backing, and skin-plating, over frames, to the inside of which they are secured by nuts and screws, the ends of the bolts being also clenched over the nuts.

I think the latter is much the more secure, notwithstanding the greater number of screws used in the French service, for in the former method the armour is, to a very great extent, depending upon the treenail fastening.

There are a few more models, well worth notice, respecting the fittings of ships. One of these is the excellent model of the bows of H.M.S. *Bellerophon*, showing the anchor, with the fittings for stowing, heaving up, &c., with deck rollers and all the necessary bolts and cleats.

A model of Harfield's patent capstan, showing the direct lead of the cable, with deck rollers and all the necessary fittings.

There is a very good style of capstan exhibited in the French department, called a perpetual capstan. The improvement made in this capstan is a ring at the base to keep the rope in the drum. The ring is loose and flat, having a section of about 1½ in. by 3 in. There is a wheel under this ring, which is moveable round the base of the capstan. When the capstan is in use, this wheel is put at the back, and as the ring lies on top of this at the back, the front drops down, thus making the ring inclined towards the lead of the rope, which causes it always to keep on the drum, thus doing away with the trouble of fleetting the rope.

Naman's patent port-hinge is also worthy of notice. It works on the principle of the ball-and-socket joint. It is particularly remarkable as being suitable for every port in the ship, which would make it very early for vessels with sharp bows.

There are a few improvements in the construction of boats of all kinds, but there are none that lay any claim to special remarks. I think I have pointed out all that is really worthy of notice in Class LXVI. of the Exhibition.

As will be seen by my report, I have not been guided by the instructions given by the Society of Arts. My reason for this is the great difficulty in getting to any of the large dockyards of France, as there are none within at least 100 miles from Paris.

I paid a visit to Mons. Claparède's works, at St. Denis, but there were only a few small boats building there. They were being built for foreign service, being made in separate compartments; but there is nothing different in the method of construction to those of English build.

In my return journey I visited Mons. Normand's yard at Havre; his work here was certainly much larger than that at St. Denis, but there was only one vessel on the stocks, and that was just commenced,

having only the framework together. As far as they had gone, there was but little difference in their work and ours. In putting together the several frames, instead of using square frame-bolts, as we do, they have round iron (galvanized) bolts, with a nut and screw at one end; these bolts pass through a dowel put between the timbers, and before the ship is planked all these bolts are screwed up tight, thus making each frame secure. They use no chain bolts (excepting in the floors); but this may be omitted in consequence of her being fitted with diagonal planks inside, from the upper deck to the limber strake. With these few exceptions her frame-work is exactly the same as ours. I also visited Mons. Bonté's yard at Dieppe, but he had only one fishing-boat building, from which there was nothing to be learned.

The education of the French Government dockyards is rather better than ours. Their schools for apprentices are very similar to our own, from which the apprentices, by a little perseverance, may rise to election in one of the schools of naval architecture, of which there are at least three or four. The examinations for these schools are carried out very precisely. They have also schools for foremen in the dockyards, which would be a very useful addition to our system of education in dockyards.

Having carefully studied all I saw in this class of the Exhibition, I am of opinion that Class LXVI. presents a very instructive lesson for naval architects, but at the same time it is incomplete.

MINING AND METALLURGY.

By FRANCIS OATS,

ST. JUST, CORNWALL.

BRITISH DEPARTMENT.

BEAUMONT'S tunnelling-machine, worked by compressed air.—It is a cylinder of 50 borers, of 5ft. 6in. diameter: the borers are fixed to a massive iron wheel, which has also a borer fixed to its centre, parallel to the other, only differing from them in the shape of its bit, the others being of the same shape as the ordinary hand-borer, whilst this has a bit of the form of a cross; this wheel has the piston of the air cylinder for its axis, which is always horizontal. The cylinder rests on a heavy frame of wood having wheels, which wheels are wedged, to prevent its shifting when working.

The work is done by the borers being moved forwards and backwards by means of the piston; at the same time, by an apparatus connected with the machine, the piston is gradually turned, and in so doing the whole of the cylinder of borers is gradually turned round. The piston can be made to make 220 strokes, of 4in. long, per minute.

The length of the borers varies according to the hardness of the rock,—long ones for soft rock, and shorter for harder rock. In boring hard granite the borers should be 2ft. 6in. long, which bore their length (in granite) in 3 hours. It will be understood that with this machine, after its work is done, there will be a hole in the centre of the drift, and a ring around it of the same depth; the machine is then withdrawn: about 8 or 10ft. pieces of wood, &c., may be placed against it, so as to keep it more safe. The centre hole is then blasted: the broken rock is then removed—which must be done by passing it through the arms of the wheel to which the borers are fixed; this being done, the machine is again advanced to its working position, and the work is resumed.

In this machine there is an apparatus connected with it by which the machine is made to follow its work (whilst boring) at a fixed rate. If going too fast or too slow, it will be easily seen, and the machine is made by this apparatus either to go faster or slower, as required. The air is compressed by a steam engine of 25-horse power.

The cost of the machine, independent of the engine and air-compressor, is £700; and the working cost would be two men to the machine, the expense of working the steam engine, and the smith-cost, which I should

suppose would be rather heavy, considering that there are so many borers.

FRENCH DEPARTMENT.

M. de la Roche Tolay's rotatory perforator or boring machine.—It is worked by a water-pressure engine of M. Perret's; consists of a tube of iron having fixed to its ring at one end 8 or 9 diamonds. The diamonds are fixed in it by means of prints being made first in the iron to receive the diamond, and after the diamond is in its place, the iron around it is hammered a little, so as to tighten it. A rotatory motion is given to this borer by the machine, and a water-pressure is given to its end so as to force it forward in the hole, which water passes through the tube, and is given off in the bottom of the hole, where it discharges the powdered rock. It should be said that the diamonds do not powder all the rock that is broken in the hole,—they only break enough to clear the way for the tube; a part of the rock goes up the tube, and, after a little boring breaks off, and is left in the tube. The tube is made to make 250 revolutions per minute, and is said to bore a yard of quartz rock in three-quarters of an hour, or granite at the rate of 7in. per 4 minutes.

To work one of these machines it will require an engine of 4-horse power; for two, one of 8-horse power, and so on.

It is very portable, and the hole might be made to bore in almost any direction that could under any circumstances be necessary, by means of holding the borer in its proper place till it has bored enough to hold itself; and simply propping the other end, would be sufficient, as there is no percussion connected with its working.

Another feature connected with this machine is, that when once set to work it wants no more attention paid to it till the hole is in its proper depth, because the borer follows as it bores; and it does not want, in ordinary boring, any change of borers; in consequence of this, one man could superintend as many as there would be room to work; and it is compact and portable enough, I should say, for one man to work two at the least in a drift of 6ft. high and 3ft. wide.

The boring apparatus, exclusive of the steam-engine and the water-pressure apparatus, can be rendered ready for boring for £100. The cost of a new set of diamonds, of course, varies with their quality and size, but might amount, on an average, to about £6 10s. per set. In boring granite, the angles require to be changed (because of being worn) after having bored two yards. This is easily done by cutting with a chisel the iron that holds the diamond, then turning the diamond so as to get another angle to bore with, and fasten as before. When all the angles are worn, the diamond may be split by an experienced hand, and again worked till all the angles are worn. The diamonds, when no longer fit for boring, may be sold, on an average, for about one-fifth or one-sixth what they cost when new.

Series of apparatus for crushing and dressing of ores exhibited by the Fives-Lille Company.—They consist of a crusher, having two jaws of about 2ft. long; one fixed and perpendicular; the other fixed at the butt moveable at the bottom, and inclined towards the former from top, being, when shut, about close in the bottom, and about 7in. apart the top. The stuff comes in at the top, and is crushed whilst pass-

through by means of the bottom of the moveable jaw being forced against and withdrawn from the fixed jaw. It is forced against the fixed one by means of rigid machinery, something after the crank fashion.

The moveable jaw is withdrawn from the other by means of a rod attached to its bottom passing through india-rubber. The stuff, after being crushed, is passed through sieves with the addition of water; the very rough is carried by a chain of cups (which receive it from the sieves) into the shoot where it was before being crushed, and from there it passes through the jaws, the same as it did before; the sufficiently fine is carried away by water to be dressed, whilst the size between those that have been described is crushed with another crusher, consisting of two rolls of about 16in. diameter, the bearings of one being fixed, and the other made elastic, by means of india-rubber being placed against it, which elasticity is regulated by means of a screw acting on the india-rubber.

It was told me that these two crushers, worked by a 3-horse power engine, would crush from 15 to 21 tons of ordinary stuff per day of 10 or 12 hours, making all the stuff to pass through holes of $\frac{1}{4}$ in. square. The fine stuff is separated by means of sieves, and is passed over an endless india-rubber table, strengthened by means of narrow pieces of wood being fastened transversely to it within. The table is a little inclined, and passes over rolls at its upper and lower ends, a rotatory motion being given to the rolls. The table is always (on the upper side, where the ore is deposited) being carried from the lower to the upper roll, the ore deposited on the table, after having passed the upper roll, of course, falls off from it, and this is received in a box beneath. A shaking motion is also given to the table (which is said to assist in depositing the ore) by means of cams at the upper end of the table, which push the table from them, and on the cam slipping, it falls back with a jam, because of the rolls being suspended by pieces of iron, something like a crank, these being pushed into a horizontal direction by means of the cams, on the slipping of which they naturally fall back to a perpendicular direction with a jam, because of the cranks striking against the iron work of the frame of the table. The rough ore is dressed in jigging-machines of the following description:—There are two iron troughs, connected at their bottoms, in one of which is placed a piece of flat iron completely covering the water which should be in it), with a rod attached to it; this rod moves the plate up and down, and in so doing acts like a force-pump, raising and lowering the water in the opposite trough; in the latter trough is placed the sieve, on one side of which is the funnel, through which the ore to be dressed is dropped on to the sieve; on the opposite side of the sieve there is a hole in the trough the width of the sieve—this hole is rendered large or small, or shut, by means of a rod of iron, with a slip of wood or a piece of plate-iron attached to it. This rod has a lever at its end, on the turning of which the hole is rendered as before said. Through this hole the dressed ore passes into a box beneath, which may be drawn off when required, on withdrawing a plug at the bottom. The waste passes over the top of the trough, and is carried away by the water. In this way comparatively fine stuff may be dressed by having a sieve sufficiently fine.

J. A. Tronillet's apparatus, called "cavateur."—It is an apparatus for making blast holes of a greater diameter at their bottom than at their top, the end answered being an amount of work done by the powder that would not be done if the hole was of the same diameter all the way up as that where the powder is.

This was effected in the following way: after the hole had been bored in the ordinary way, sufficiently deep, a tube was put into it, which had, more or less, solid iron at the bottom; this tube had, at its bottom, two long holes opposite one another; into this tube was introduced a bar, with tools at its bottom, attached to it by means of a pin passing through them; these were closed so as to pass them through the tube, but on coming to the bottom of the tube, and the tools meeting with the two long holes, of course the tools projected through, against the rock in the side of the hole; and on a rotatory motion being given to these, they of course make the hole larger. Different-shaped tools are used at different stages.

PRUSSIAN DEPARTMENT.

Doering's boring-machine, worked by compressed air, requiring a steam engine of four-horse power to compress the air.—Consists of two sockets, fixed at right angles to one another, the one perpendicular the other horizontal; the perpendicular one has within it a massive bar of iron, which has ridges in it to support the socket, and with which a tooth-wheel, attached to the socket, works so as to move the socket up or down; this bar is fixed, at top and bottom, to an iron frame having four wheels; it needs, when working, some kind of stay, at the top, to keep it steady; the other socket has another bar passing through it, the same in principle as the former; but in this case, instead of the socket moving on the bar, the bar moves forward and back through the socket; these sockets are loosened or tightened by means of screws; on the end of this bar is a hole in which the axle of the cylinder's support turns: the cylinder's support is, of course, capable of being turned round on its axis. It will be seen from these three movements (the horizontal bar, of course, can be turned round in its socket, and the perpendicular socket can be turned round on its bar) that a hole may be bored in any direction that would be necessary. The borer is attached to the piston and is turned by an apparatus at the opposite end of the piston from that at which the borer is attached: the piston makes 400 strokes, of about 4 ins. long, per minute. The bits are somewhat peculiar in form. Into the hole, whilst boring, is also introduced a jet of water, which is regulated by means of a cock.

A notice concerning this machine was given me, in which it was stated, that 7 inches had been bored in granite in $3\frac{1}{2}$ minutes with it. I can only say it did not bore so fast as that, whilst I was looking on, but the stone was unusually hard.

In consequence of there being scarce any gearing outside the cylinder except the two iron-screwed bars on which it travels, the machine may be made to bore a hole close to the wall of the working, and almost parallel to it.

The notice I had given me stated: these machines were used:

zinc mine near Aix-la-Chapelle, and the rate of advance was 2½ times greater than it was by hand-labour: the drift was only 6 feet high, while the expense of driving per metre had been reduced from 175 frs. to 95 frs. The repairs of machine are estimated at 12 frs. 25 c. per metre: the total result being a cost of 120 frs. 66 c. per metre, against 164 fr. 88 c. by hand-labour, and driving 2½ times as fast.

I was unable to obtain a knowledge of the cost of the machine.

AUSTRIAN DEPARTMENT.

In this department were some models of dressing machinery, which (from simply looking at them, without having any explanation or seeing them at work) I could not fully understand, except what I inferred to be a jiggging-machine, which I understood as follows:—

There was a large wooden box of four divisions. In the first was the sieve, with an iron rod passing down on each side, and connected over by a beam, to which was attached a rod worked by a crank: underneath the sieve I suppose these iron rods held an iron plate, which, on the motion of the crank, lifted and lowered the water in the trough; on one end of the sieve there was a funnel, through which the ore to be dressed was dropped on to the sieve. At the other end of the sieve was an iron shutter, the width of the sieve, which was raised or lowered by means of screws. On its being raised from the sieve a hole was made, the width of the sieve: through this hole the dressed ore passed, after which it had to pass over another shutter of the same description, which is also raised or lowered by means of screws, and is fixed just level and close to the edge of the sieve, and the top of the shutter may be lowered, if necessary, to the same level as the sieve. After the ore has passed over this shutter, it falls into the second division. The waste and fine stuff are carried by the water over the top of the first shutter, and are kept from going down amongst the dressed ore by passing over an iron plate; the rough waste then falls into the third division. The water passes through a sieve, carrying with it in suspension the fine matter, which is deposited in the fourth division. When required, the contents of these four divisions may be drawn off on the withdrawal of plugs. The water in this machine passes over at the top.

SWEDISH DEPARTMENT.

O. Bergstroem's Boring Machine.—It is worked by compressed air, and is very simple. The cylinder is attached to a screwed iron bar, on which it may be moved forward or back. The borer is of the ordinary kind, and is attached to the piston, which may be made to make 320 strokes per minute, in which time, in ordinary granite, it has been made to bore an inch and a-half. The before-mentioned bar, on which the cylinder travels, is its only stay whilst working, one end of which is placed against the rock to be bored. The other end, which is divided into two smaller screwed bars, may be fixed against the ground, if convenient, or, if not, against a piece of timber placed across the working, and tightened to that position by means of turning the nuts of the small screws, which have pieces of iron outside them to stick in the wood, or to take grip in the ground. As these nuts are brought nearer to the

end of their screws, and in so doing carry these pieces of iron or grips along with them, it will be seen that the cylinder's support will be lengthened, and therefore tightened. This machine is exceedingly compact and portable. I should think a man could take it on his back, or under his arm, and carry it almost anywhere. Owing to this, and its simplicity, it can be made to bore anywhere, and in any direction necessary, in end, shaft, rise, or any other kind of work. It takes an engine of 4-horse power to compress the air, and the cost of the boring apparatus is about £20.

There was also in this department a small model, under cover of what appeared to me to be a 3-head stamp, the lifters of which were wider than the heads, therefore making the heads to be farther apart than is usual in Cornwall; a crushing machine, having rolls, the grinding surfaces of which were notched or jagged; and a skip, with the shaft in which it worked, all of which were worked by an undershot water-wheel.

CONCLUDING AND GENERAL REMARKS.

In concluding, I would say that what I have reported on is entirely from the mining and metallurgical apparatus group, in which there were also safety-luces, &c., that were connected with mining, which I could say little about, more than the statement that such things were there; and there were also things mentioned in the catalogue that I had which I should very much like to have seen, but could not find them in the Exhibition or any of the grounds: nor could I find any one to tell me; such, for instance, as an Austrian boring-machine, which I should much like to have seen; and I had expected to have seen Gen. Hanck's machine in the American department (which has been removed from the Exhibition for some purpose), but up till to-day it has not arrived, and I must leave without seeing it. I have said nothing about the things in the Mining and Metallurgical Department, because I could say nothing about them more than that there were various collections of ores from different districts and countries, with some mining and geological drawings.

With regard to the things that I have reported on, and the possibility of applying them to that kind of mining with which I am acquainted, I can only say that Beaumont's machine is a very heavy one for Cornwall in many respects. It is heavy in weight, in original cost, and in working cost, inasmuch that it would prevent its trial in Cornwall: however, the owner informed me that he is open to take contracts with the machine for any length of level, doing which, I suppose, he would like to begin from surface. From this I should think a trial might be given to it in Cornwall to take up a long drain or adit to a mine, which could be done at no loss to the parties concerned, as the owner would never possibly, I should think, charge more for the work than it would cost by hand-labour.

As to the diamond machine, I favour it because of the little attention it requires, so that one man could attend to any number of them at one time that could be placed to work in any mine working. It may be argued that the diamonds are expensive: but it should be remembered that no steel is used, and little smith-cost incurred.

The Doering machine is, I think, too massive for ordinary Cornish work; but, among the whole, it is the Swedish machine that I prefer for Cornwall, because of its compactness, portability, and simplicity. I must say, as a miner, that I like a machine worked by air best, because it answers the end of giving good ventilation to the working. This last-named machine could be worked in a stope, I should think, very well; but this, as well as the others, would work in an end or shaft best. With regard to the whole of them, I would say that they would bear comparison with hand-labour best in working excessively hard country. Although the Swedish and Doering machines do not follow their work of themselves, yet, as it requires a man to look after one of them, he might as well make them follow their work as not.

The dressing machines, I should fancy, from looking at them, would answer their purpose well, as, in fact, the gentleman in care of the French ones gave me to understand that they did.

SILVERWORK.

By P. A. RASMUSSEN,

SILVERSMITH.

THE Society of Arts having done me the honour to select and assist me to proceed to Paris, for the purpose of studying and reporting upon the silverwork in the French Exhibition, I now beg to submit the following report to the Council, and propose first to examine the work exhibited by the different countries, and then to give an account of what information or knowledge I was able to collect, affecting in any way the character or price of the work, or the condition of the workman, together with such observations or suggestions as I may think it part of my duty to make.

I have beforehand to claim the indulgence of the Council for any imperfection in language or expressions, which, no doubt, will be found in this report, the preparation of which has of course been to me a task of a novel kind.

The silver work in the present French Exhibition is arranged in Class XXI., which, under the term *orfèvrerie*, contains not only silver-plate properly so called, but goldsmiths' work of different kinds, whether in gold, silver, platinum, copper, steel, or iron, so far as they do not come under the term of jewellery, in which case they belong to Class XXXVI. also enamelled work, electro-plated and Britannia metal goods, work in aluminium, and other minor branches.

FRANCE.

The largest show in Class XXI. is made by France, about thirty exhibitors (nearly all manufacturers) having sent specimens of their products. They are arranged in a court by themselves, and bear abundant testimony to the fact that great efforts have been made in France to be well represented on this occasion. Among the most prominent exhibitors are Christofle, Odier, Fumière, Froment-Meurice, and several manufacturers of ecclesiastical plate. Christofle occupies the largest and best space, with a very brilliant and varied display of silver, electro-plated, and galvano-plastic work. Prominent are the two great services for the Emperor and the Hôtel de Ville of Paris, parts of which had been exhibited in the London Exhibition of 1862. They have been designed and modelled by some of the most eminent artists in France, and executed with great care in all details. A peculiarity in the large centrepiece of the service for the Hôtel de Ville is that it has been richly gilt in part with differently-coloured gold having a good effect. The figures

appeared to be all cast, but very well chased. There are several rac-cups and statuettes in silver—one presented as a testimonial by the French Government to Mr. Larkins, of the Board of Trade; also some smaller objects, beautifully chased, such as a sugar-basin in repoussé, after a model by Klagmann; two salt-cellars by the same artist, as well as a very fine jewel-casket; but especially remarkable for high and delicate finish is a small coffee-service, consisting of coffee-pot, sugar-basin, and ewer, in Louis XVI's style, chased in repoussé by Michaux, after a model by Doussamy. It is certainly among the best executed silver-work in the Exhibition; and though the ornament and foliage are bold in relief, they have a rich and soft appearance, and the outline of the different pieces is well maintained. A toilet-service, also in Louis XVI's style, is also beautifully modelled and chased: all the small objects composing it are decorated with small figures and flowers, minutely carried out; and they are placed on a table, the top of which is a kind of mosaic, in lapis-lazuli and jasper, inlaid with gold and silver. There is also a large tea-service in silver repoussé, curiously decorated with parts of different animals; thus, for instance, the tea-urn rests on four elephant's heads, or rather their trunks; it is the design of an architect, M. Bossigneux, and is more original than tasteful. Belonging to this service is a tripod-stand, on which it is placed, very interesting as a piece of work of a novel kind. It is made of bronze, partly gilt, partly plated, and decorated with different masks; but the top plate is a thick plate of copper, beautifully ornamented with incrustations in gold and silver.

Of a similar character is a tea-service placed close by; but here the metal of which the different pieces are made is bronze, and the incrustation silver: the effect of these differently-coloured metals thus mixed together is generally very good, but it must be admitted that for practical purposes the employment of bronze or copper in such work as tea or table services is not desirable. Christophe also sends several coffee and tea-services enamelled in different styles; one, I was informed, had been bought for the South Kensington Museum; and a series of tea-services, dish-covers, and other objects decorated by a new process, called electro-magnetic engine-turning, made by a machine invented by M. Delafosse: the result differs from that produced by the usual engine-turning process, in so far as the lines seem to run parallel to each other in a horizontal direction round the body of the work; they are kept mat and interspersed with small bright spots, representing mostly lilies or other flowers; it has an effective appearance while new, although perhaps a little coarse; and I was told that it was a very cheap process. I doubt, however, whether it is well adapted for the wear to which tea-services are exposed. These are some of the principal objects in Christophe's exhibition, as far as it came within my province to examine it; he has besides a very extensive collection of electro-plate, his principal manufacture, and the one which is almost exclusively carried on at his great manufactory in the Rue de Bondy, which I took the opportunity to visit; he has also a great many galvano-plastic objects of various kinds—groups, figures, busts, ornaments, and others, and on the whole his show in Class XXI. is not equalled by any other exhibitor for variety, grandeur, or illustrations of new processes or manner of executing the work.

Opposite Christoffe's, in the French silver court, is the large show of Odiot, who works exclusively in silver, and exhibits a great deal of plate: candelabra, dinner, tea, and coffee services, including spoons and forks; much of it very rich and costly, and of excellent workmanship, but somewhat clumsy in form. Some of the services claim to be considered as works of art, panels and bas-reliefs, with sculpture, having been introduced; these parts are then oxydised very dark, forming a too strong contrast to the rest of the body, which is brightly burnished: one of these artistic services, with panels of flowers and foliage, beautifully chased, and priced at the enormous sum of 13,000 frs. (£520), was almost entirely cast, and I thought it so heavy as to be very unpractical.

But the best of Odiot's works—one which really is a work of art—is a large testimonial to a M. Pétin, a French iron-master, consisting of a centrepiece and two candelabra carrying thirteen lights each; although large and massive, the design is very elegant; the modelling of the figures seated round the lower part of the three pieces, and representing workmen engaged in ironworks, holding hammer and tongs or other tools, is very good, and remarkable for the entire absence of extravagance in form sometimes existing in French modelling, while the execution is carefully and conscientiously done, though not so minute in detail as is the case with much of the French chasers' work, but which here would be out of place on these broad-shouldered Herculean men, the mounting is sound, clean, and correct, and some panels, representing machinery copied from the actual works, were left from the cast without having been touched by the riffler or chasing-tool, showing the perfection of the modelling as well as the casting. The three pieces are excellent samples of honest, sound workmanship united to art of a very high character, and the price, 65,000 frs., appeared very moderate, considering that the weight must have been at least 2,000 oz. Odiot has been rewarded with a gold medal.

Adjoining Odiot's stand is that of Marrel, large, but containing very little distinguished by beauty in design or execution; several nice-cupped inferior workmanship, and a coffee-service, decorated with light blue enamel on a silver ground: the silver being in that half-bright condition known as scratch-brassed (produced by brushing it with a brush made of fine brass-wire), and the two colours harmonising very badly.

It is, perhaps, in the case of Fanniére that we find the greatest excellence of goldsmiths' work of the artistic character exhibited in the French section. Other exhibitors show some good pieces, and not unfrequently many of a common character; but in Fanniére's case I think it is impossible to discover one piece of inferior work, while many are real master-pieces. To specify a few of these, I would mention two shields in repoussé: the one in iron, of a round shape, illustrating the legend of Roland le Furieux, while the other, which is oval, is in steel repoussé of a considerable thickness: this is not finished, but the difficulty of raising the figures to a very bold relief has been successfully overcome, and the work is sufficiently advanced to show the subjects illustrated—the Last Judgment; it promises to become an extraordinary work of art, as well as of technical skill. There are also several ramprizes, one made for the Great Prize of Paris horse-race, with horses

employed as handles and bas-reliefs well executed ; a pair of very fine salt-cellars, one the figure of Neptune, the other Amphitrite, placed on square pedestals, and each supporting two demi-shells, containing the salt ; a pretty beer-tankard, the body of which is chased in imitation of wood, and ornamented with hop plants, spreading over the body and handle ; the whole being repoussé, crisp, and natural in appearance ; a tea-service, belonging to M. Fould, is also here ; it is chaste in form, and, of course, well executed ; the kettle has the peculiarity of being mounted with two spouts, one opposite the other, enabling persons on either side of the table, to use it without having to turn it.

Next to Pannière is the stand of Froment-Meurice, a name long distinguished, and who also, this time, maintains his high reputation ; his exhibited works are of the greatest variety ; from the cradle, for the Imperial Prince, to breakfast and tea services, and brooches, and bracelets, all bearing the stamp of originality. Among the most elegant and expensive is the sideboard decoration for the Hôtel de Ville in Paris, the principal object of which is the bust of the Emperor Napoleon, carved in aqua-marina, having a back-ground of red jasper, richly ornamented with a border of amethysts and clusters of pearls and topazes ; right and left of the bust are female figures, seated on brackets and leaning on children, representing Peace and War ; the nude part of the figures is in rock crystal, while all the drapery is oxydised silver, and the whole is placed on a table of blood-stone and silver. He also exhibits a large centre-piece, belonging to M. Pereire, with figures of Neptune, Venus, nymphs, tritons, dolphins, and sea-horses, modelled by Fauchères and Klagmann, and all executed in repoussé ; a very complete and handsome breakfast-service, belonging to the Empress of France, and two tea-services, decorated in an original manner. In one of these, the ornament, consisting of a border of vine-leaves and grapes, was merely etched, or "bitten in" by means of aquafortis, and left without being repaired by chasing or engraving, having a somewhat unfinished appearance, and looking, to my mind, as if it were prepared for the reception of enamel ; it was, however, meant to remain as it was, and has the advantage of being inexpensive, and easy to keep clean ; it is a mode of decoration to be especially recommended for not disturbing the outline of any piece of work, if it be ever so delicate, and this is often difficult to avoid where the ornament is produced by chasing.

In the objects exhibited by Rudolphi, there is also great variety and originality, though also often eccentricity in style ; he has many articles in lapis-lazuli, mounted with oxydised silver, often partly gilt, enamelled or studded with emeralds and turquoises ; several cups entirely enamelled ; and in the Danish section his large vase which figured at the London Exhibition, 1862 ; it is in oxydised silver ; the subject illustrated is " Pandora's Box," and it is, perhaps, better executed than many of his later productions.

Coffignon's work is much of the same character as Rudolphi's, and includes a large quantity of bijouterie, in oxydised silver, neatly chased and mounted.

Wiese, a pupil of Froment-Meurice, and who has shown some fine silver work on former occasions, is not represented in Class XXI., but has

a few small objects in the French jewellery court, consisting of trinkets and curiosities, and a beautiful sword presented to General McMahon, all very tasteful, and remarkable for the highest possible finish in their execution.

There are several exhibitors of ecclesiastical plate in the French section, being a branch of goldsmiths' work far more developed in countries where the Catholic religion is predominant than in Protestant countries. The quantity shown is enormous, and it is generally of a very showy character, glaring colours in enamel and stones, or imitations of stones, and gilding and burnishing being much employed. Some of the work is again remarkable for its size; for instance, a tabernacle, in plain white silver; it is more than 9ft. high, weighs 240 to 250 lbs., and has a value of 60,000fr.; it has been manufactured by Thiéry, of Paris. But the best show is made by Calliat, of Lyon, who exhibits some very excellent church-plate in Gothic and Byzantine style. In the case of Poussiègue-Roussand, of Paris, are also some very good specimens of the same character, but, on the whole, hardly so rich in appearance.

Ecclesiastical work, being in great measure plain without much sculpture or chasing, is specially adapted to show the quality of the goldsmiths' work. The chalices, patens, candlesticks, &c., are frequently elaborately shaped by the hammer; they are often octagonal or hexagonal in form, and the hammering, as well as mounting, soldering, and polishing, require to be done with the greatest purity and accuracy.

Among French goldsmiths not making any pretence to produce work of high artistic merit, there are some who show good commercial work for ordinary table-use.

Ancoc has some tea-services very effectively decorated with a flat, slightly-raised ornament, the ground of which is gilt, while the ornament itself is left silver, being preferable to having the raised ornament gilt, which is, of course, more exposed to rubbing and wear than the ground.

Hugo also exhibits some well-made tea-set work, showing great taste, while he at the same time makes it very light and at moderate prices. As I also paid a visit to his atelier, in the Rue Béranger, I may have occasion to mention him again.

In the large case of Monnet, of the Rue Rivoli, adjoining Christoff's stand in the French section, I observed, besides a great deal of silver-work, also many objects made of a new composition of metals, which he has called "fers-argent," containing, as the name implies, one-third silver, and sold at a price of 100fr. per kilogramme, while the old metal is taken at the price of 75fr. It has been invented and patented by Mon. Ruolz, whose name is well-known in connection with electroplating and plating. I saw several ingots before they had been either hammered or rolled. They appeared sound in substance, had the same colour throughout the whole mass (closely resembling silver colour), and received a good bright polish. There were many specimens exhibited of finished work made in this metal, some cast and left from the casting, some chased, and some hammered: of the latter kind especially, a great number of spoons and forks, which I found to be strong and stiff, and hardly to be distinguished from silver in their weight, the specific weight

of "tiers-argent" being in proportion to that of silver as 9 to 10. They were sold at 16fr. per couvert for table-spoons, and 12fr. for desserts, which is far dearer than electro-plate; but then the intrinsic value of electro-plate is very trifling, and, if much used, they require to be frequently re-plated, while tiers-argent, of course, requires no plating, having the same colour right through.

From "tiers-argent" to aluminium is a natural step, as this last-mentioned metal occupied about the same position in the Exhibition of 1855, when it was first brought before the general public, as tiers-argent does in this present Exhibition; and although aluminium may not have obtained the importance and universal adoption which was then predicted for it, still there are in this year's Exhibition many good products of this metal and its alloy, aluminium bronze, showing that great progress has been made in working it, and that it is now employed for a great variety of objects. The principal manufacturer is Morin, of Paris, who receives a gold medal for his collection, a very extensive one, including large cast figures and busts, cups, flower-vases, watch-cases, telescopes, and a great deal of church-plate: for telescopes the great lightness of the aluminium makes it exceedingly well suited, while the church-plate is principally made in aluminium bronze, having a rich golden hue, and receiving a good polish: it is declared to resist the action of the atmosphere well, and to be, consequently, easily kept clean and bright. The difficulty at first experienced in soldering aluminium, has been entirely overcome by the discovery of a suitable solder, by a M. Maurey; and all the objects I saw in this large collection, were perfectly well mounted and soundly soldered.

I have already noticed several instances of enamelled silver-work in the French section of Class XXI., but there is one exhibitor, M. Lepec, of Paris, who, although classed with the silversmiths, does not, I believe, exhibit a single specimen of silver-work, but exclusively enamelled objects, made either of gold or copper; they are all works of the very highest perfection: the design of his cups, tazzas, and jewel caskets, is elegant; and they are delicately ornamented with enamel of the most brilliant colours; among which, a deep red, very difficult to produce, was very beautiful; his principal piece is a nef, a kind of cup, somewhat in form like a nautilus shell; it is executed in gold, but with the exception of a few mouldings and a couple of figures, which, along with some gracefully-shaped and enamelled leaves, form a handle, nothing is seen of the metal, the whole body being covered with enamel: the mounting of the figures, handle, foot, and lip—work that requires the utmost care—is done far better than is generally the case in that kind of work, and no more perfect piece could be found to grace any collection; it has been purchased by Mr. Alfred Morrison, of London, for 40,000 fr., and the manufacturer, M. Lepec, has also been rewarded, not only by the gold medal, but by the order of the Legion of Honour. Nearly all his other objects are in copper, but, as in this nef, little or nothing is seen of the metal.

Not far from the French silversmiths is the splendid show of Barbédienne, the celebrated Paris bronze manufacturer; and here are several specimens of goldsmiths' work of the most excellent workmanship; two

beautiful cups in silver repoussé, the form being copied from a well-known antique original in silver in the museum at Naples. They are decorated with fruits and flowers. Also, a jewel-casket and a pair of candlesticks, likewise in silver repoussé, and soft and delicate in execution: three large perfumery flacons, with plateaus in fine gold, minutely chased in Eastern style; and, above all, two very interesting specimens of a novel character—a cup and a jewel-casket, both in copper, inlaid with gold and silver. The cup has a design inlaid in silver, going right through the whole thickness of the copper, and consequently forming the same design on the inside of the cup as on the outside; this has been smoothed into an even surface with the copper, and on the top of that has again been mounted some very bold foliage and flowers, in gold and darkly-oxidised silver, producing a very rich and novel effect. The casket is incrustated with gold and silver, so that the precious metals form a slightly-raised ornament, which is then beautifully chased, and the workmanship of these two pieces is throughout perfect. It is evident that work of this description must be very expensive, and I found the cup priced at 10,000 francs; the casket at 16,000 francs. There were many more pieces of work in Barbédienne's stand inviting inspection: some admirable plated mountings on wooden cabinets, for instance; but, as these may be rather reckoned as bronze work than goldsmiths' work, I should go beyond my province in describing them here.

HOLLAND.

Following the order of the catalogue, as well as the arrangement of the building, we next come to Holland, whose silver work appears to great disadvantage, compared to what we have just been examining. It is, however, really very inferior in character, heavy in design; and some of the tea-set work very unpractical in the form and position of the handles and spouts.

BELGIUM.

There are several pieces of a rather better quality, though far from being elegant or first-rate work. Even the objects sent by Dufour, goldsmith to the King, and who ought to represent the better standard of work, are but very ordinary in taste and execution. He sends, among other objects, a dessert-stand, decorated (?) with some heavy, dead-looking mat ornament on a bright ground. Some church plate, from the same country, is rich and showy-looking at a distance, but did not bear close inspection.

PRUSSIA AND THE NORTH GERMAN STATES.

Prussia has sent the products of about a dozen manufacturers, the majority from Berlin. Messrs. Sy and Wagner's is the most considerable show, and contains many large and well-executed pieces of silver-work, a few among them being in repoussé, but the great bulk cast. They have exhibited two shields, one presented to the ex-King of Naples, the other to the Crown Prince of Prussia on his marriage; there is some good modelling in both, although as a whole they are rather too massive-looking: the chasing is carefully and conscientiously done, but appears hard

and lifeless, a strong contrast to the vigorous and yet soft execution of the French work of a similar kind.

Vollgold, also of Berlin, exhibits a really grand piece, a very large centre-piece, with a number of baskets to hold fruit, flowers, and dessert, and with branches to carry twenty-one lights; the many figures representing Bacchantes dancing and playing, are well modelled, and the chasing and mounting are particularly cleanly and carefully done; it is certainly not only one of the largest but also one of the most elegant pieces of silver-work in the Exhibition. With the exception of these few objects mentioned, and of some church-plate sent from Trèves, the work from Prussia, such as is used for ordinary purposes, is of the commonest description: it is, in a great measure, stamped, very thin, made of bad silver, coarsely finished as regards surface, and without any character or style; remarkable, indeed, by its cheapness; but for people able to use silver goods at all, I should consider it too dear at any price; it is far inferior in execution to the iron-work sent from the same country by the royal tundry, Count Stolberg, and others.

Baden sends a couple of large, well-made bookcovers, in Gothic style, some medallion portraits in silver, of the Prussian and Baden reigning families, and an example of curious taste, a large representation of the Crucifixion, some 3 ft. high, the figure of Christ being silver, the Cross, dark wood; and the figure is encircled by vine-leaves and grapes in great profusion: these are in white silver, mounted on the wooden cross, and as a specimen of clean mounting it is very good.

WURTEMBERG.

Among the small German States, Wurtemberg takes the first place for silver-work, judging from the objects in the Exhibition. M. Forster, of Ommund, has sent a large and well-assorted collection of silver goods—a couple of race-cups, dinner, tea, and coffee-services, candlesticks, goblets, ink-stands, &c., all very tasteful and of excellent workmanship; the more artistic pieces, such as the race-cups, are both carefully modelled and well chased. An important branch of industry in this country is the manufacture of thimbles, in gold, silver, brass, German silver, and steel; whole manufactories are entirely devoted to this speciality, which is exported to every part of the world. There are numerous samples of this little article exhibited by different firms; they have been classed with jewellery in Class XXXVI.

AUSTRIA.

Austria, with its splendid exhibition in many branches of industry, is in deed poorly represented in silver work; there are, I think, not more than one or two Vienna goldsmiths showing silver-work, and this is very little—a drinking horn and some well made church-plate; the old-established and eminent house, Meyerhofer, in Vienna, has not exhibited at all. In jewellery and bijouterie I saw many beautiful objects from Vienna.

SWITZERLAND.

Here we find in the way of silver-work a solitary cup, with cover, made after an old design, attributed to Holbein; it is from Basle, is

partly gilt, and is adorned with medallion portraits of great composers; the mounting has been well done, but the chasing is rather inferior.

SPAIN.

Some iron and steel objects, shields, inkstands, &c., beautifully damascened with gold and silver, are the most noticeable specimens of goldsmiths' work exhibited by Spain; the best work of this description is that by Zuñiga, of Madrid; but the silver-work is very coarse, both in taste and execution.

PORTUGAL.

Portugal has sent some very fine filigree-work, baskets, and personal ornaments, of national patterns, but, as with Spain, the regular silver-work is very coarse, and of inferior workmanship; where, for instance, any figures or masks were introduced in the work from any of these two countries, the eyes, lips, nails, &c., were brightly burnished, while the other parts were a dead coarse mat; this reveals a very unrefined taste.

GREECE

Has but a few small articles in filigree.

DENMARK.

In the Danish section is exhibited a large collection of handsome silver-plate for table-use, such as tea and coffee services, claret-jugs, candlesticks, goblets, and spoons and forks, as well as a few articles of a more ambitious character. Among the latter is a large drinking-horn, in oxydised silver, partly gilt, designed by Mr. Peters, of the Royal Academy, and executed by Mr. Christesen, of Copenhagen: it is in Gothic style, ornamented with about twenty figures, and a number of animals or grotesque heads, as well as many fine mouldings: all the details used in this style are most elaborately and faithfully done, and it is, as a whole, of the very best workmanship; the price is about 11,000*frs.*, and the same manufacturer has already sold several specimens of his work for the Kensington Museum, especially gold ornaments from old Scandinavian patterns. Mr. Christesen has also sent a great deal of silver-work of a more general character—tea-pots, coffee-pots, claret-jugs, &c., nearly all in the Greek style, and remarkable for the care and neatness with which they have been executed, and still more so when their price is taken into consideration.

Very interesting is also the collection of silver plate belonging to the Art-Lottery of Copenhagen. This Association corresponds to the Art Union of London, but distributes among its prizes a great deal of silver ware of good quality, and has greatly encouraged the production of superior work. They employ the best artists of the Royal Academy of Copenhagen to design the objects, which are then, under their surveillance, executed by the most skilled workmen; the result is that even the commonest objects for domestic use are often beautiful and chaste in form as well as decoration. The Greek style is predominant in the works exhibited by the Art Lottery; and among them we find a pair very elegant candelabra, some candlesticks, cpergnes, and spoons and forks—the latter articles even being tastefully ornamented on the handles

there are also five complete tea-services in different styles—Greek, Byzantine, Renaissance, Italian, and Runic (derived from antique Scandinavian originals), all full of character, and variously finished; while the Greek service was plain white, the Renaissance was in oxydised silver, gilt in parts. These two had been purchased by English customers. The tea-kettle on a stand, belonging to the Byzantine service, was very original in design. Denmark has half a dozen exhibitors of goldsmiths' work in gold and silver, the two already mentioned being the most important.

SWEDEN AND NORWAY.

Sweden has sent no silverwork at all to the Exhibition, although Stockholm can boast of having some very good goldsmiths, and the Swedish workmen of our trade enjoy a high reputation on the Continent. Norway has an exhibitor in Mr. Trostrup, of Christiania, who has sent a great variety of objects in silver:—a vase, with a bouquet of well-made flowers and ferns, also in silver; a pair of claret-jugs, with Thorwaldsen's bas-reliefs of the Four Seasons traced lightly on the body, only in outline, without being raised, and having a very delicate effect; several dessert-stands, a very good tea-set, and a great number of ornaments in filigree, excellently done, and, as far as regards design, it was perhaps the best filigree work in the Exhibition.

RUSSIA.

In the Russian section is exhibited a large collection of costly articles by Sasikoff, of St. Petersburg and Moscow. They are all in silver, but niello is unsparingly employed, giving the whole a very rich appearance. They are mostly in the peculiar national style—Russiified-Byzantine, and are specially remarkable and interesting for the great amount of niello work applied as a decoration to the various articles. Not only tobacco and snuff-boxes, cigar-cases, and purses, but large book-covers, cups, tankards, and even spoons by the dozen, were here lavishly ornamented in niello, proving the great strength of the niello compared with enamel, which would be quite unsuited to spoons. It seems that this very ancient art is now almost confined to Russia. There was, indeed, one exhibitor of niello work in the French jewellery court, M. Chailoux, of Paris; but the objects he exhibits are very small, and hardly equal to those seen in Sasikoff's stand. As is well known, niello is a composition of silver, copper, lead, and sulphur, forming, when melted together, a deep black mass, which can be filed, smoothed, and polished like metal; the ornament desired is engraved or etched on the silver, and the niello is then melted into the depths, in a similar way as enamel: if successfully done, the whole may then be filed and polished to an even surface. This art is said to have been practised in Tula, in Russia (where the well-known Tula snuff-boxes are still manufactured), more than a thousand years ago; and even before that time, in the fifth century, niello work was done at Marseilles: it reached its apex in the fourteenth century, when Finiguerra and other Florentine goldsmiths brought it to the very highest perfection. Then it became neglected, but it was revived by Cellini, in the sixteenth century; he

speaks about it as having been almost forgotten when he commenced practising it. Some thirty to forty years ago it again became very fashionable in Paris, where Messrs. Wagner and Mention employed a large number of men entirely in that speciality, but at present but little is manufactured out of Russia. The same exhibitor has also a large and very bold piece of silver repoussé work, illustrating a scriptural subject. It has wisely been placed so as to allow a close examination of both sides of the metal, and the back proves that it has been made in the genuine repoussé manner. The relief is unusually bold, and some parts, too elevated to be raised out of the same plate, have been made separately, and soldered on, not diminishing the credit due to the workman who executed it. As regards the finish, it is not so highly or minutely done as some figures in the French section, but the style is altogether different, the whole is large and broadly treated, and does not call for a microscopic finish.

ITALY AND THE PAPAL STATES.

However well Italy may be represented in jewellery and bijouterie, by the beautiful work of Castellani, of Rome, and Casullo, of Naples, on a description of which I have no right to enter here, it is certain that what little there is of real silver-work had better have remained at home; there is a tea-set, of large dimensions, clumsy in form and very coarse in workmanship; it seemed to me, both in size and in style, only fit for Gog and Magog. The old reputation of Italy is, however, maintained, not only by the jewellery above mentioned, but by many beautiful objects in iron—vases, shields, helmets, swords, etc., damascened with gold and silver; among them, a very pretty vase, belonging to Mr. Layard; comparing them with the objects of an exactly similar character, exhibited by Zuñiga, of Madrid, these latter are, however, very superior in delicacy and elegance of design, as well as purity and perfection of workmanship—impossible to surpass.

TURKEY.

Turkey has a large show of gold and silver filigree work: even large objects, like candelabra, being executed in this primitive and not very strong kind of work; of silver-plate, properly so called, there was none, but a deal of damascened iron work, among which many spoons, with very small, yet distinctly executed gold ornaments of oriental character.

AMERICA.

A few steps take us from Turkey to the United States of America (in the Exhibition), where I found but one exhibitor of silver-work, Tiffany, of New York, who, besides a pair of large models, in silver, American river-steamboats, shows several tea-services, of apparent solid workmanship, well polished, but with no attempt at artistic excellence; in fact, the plainest was the best, as the chasing or ornamented work was but very inferior. I observed also that the handles were generally unpractical in form and badly placed on the body: the steam-boat models were elaborately and no doubt well executed, but it seems a curious application of a material like

such objects look best when executed in the same material as their originals.

ENGLAND.

The English gold and silver-work, as well as jewellery, has been catalogued and arranged together, whether belonging to Class XXI., or to Class XXXVI.; which, in the French section, have been kept strictly separate; this arrangement is, no doubt, due to the fact that a majority of the English exhibitors are dealers in all the branches of the trade, and, not like the French manufacturers, only in one branch. Bapst, Mellerio, Rauvenat, do not show any silver-work, any more than Odier, Christofle, or Fumière exhibit in the jewellery class. The number of exhibitors in the two last classes is but thirty-four, against some one hundred and sixty in the French part, and among them are many provincials. They represent, however, a great variety of manufacture, including fine jewellery, gold and silver plate, from the most artistic work to the commonest object; electro-plate, Britannia-metal goods, aureburnean jewellery (ivory and gold), ecclesiastical plate, in silver or gilt metal, engraving, enamel, coral-work, scotch and jet ornaments: the prize works from the annual competition of art workmen, exhibited by the Society of Arts; some of a similar kind from the Architectural Society, gilt or plated jewellery, etc. Several well-known London firms do not exhibit at all; for instance, Messrs. Garrard, Smith and Nicholson, Barnard, and others; but it is satisfactory to find that the firms who have long held the lead in the production of silver-work of the highest quality in England, Messrs. Hunt and Roskell, and Messrs. Elkington and Co. are well represented, and show beautiful specimens of artistic work. Among the many magnificent objects exhibited by Hunt and Roskell, are some of Vechte's best works, which stand unrivalled for conception and vigour, as well as softness and delicate finish: the elegant and large Breadalbane candelabrum, nearly six feet high, constructed of silver and steel, beautifully damascened with gold; the numerous figures, in oxydised silver, are full of life and excellently chased: nearly every part of this great work is inlaid with fine intaglios, so arranged as to become transparent, by means of artificial light inside; the whole forming one of the richest and most original pieces of metal-work ever executed in England, France, or Italy. Besides this candelabrum there is, by the same artist, a very fine vase with pedestal, belonging to Lord Ellesmere: it is but of small dimensions, compared to the Breadalbane piece, but light and elegant in design, and beautifully executed: also a large gold medal in repoussé, and a book-cover in platina repoussé, two exquisitely-chased objects. Among works performed by other artists, is the beautiful Outram shield, in oxydised steel damascened with gold: it illustrates important episodes in the career of General Outram in India; also the Kean Testimonial, consisting of a large vase, a pair of candelabra, two groups and several objects presented to Mr. Kean, all illustrating scenes frompeare's plays, modelled by Armistead, and chased with the greatest care and historical truthfulness as to costume. There are also a teapiece and two vases, belonging to the Prince of Wales, in

oxydised silver, partly gilt; the centre-piece contains a group representing Edward the First presenting his new-born son to the Welsh chiefs, and portraits of eight princes of Wales; it is modelled by Barrett; the figures are well-chased, and it is throughout of the very best workmanship; the handsome Lawrence Testimonial, and the fine large group of stags belonging to Lord Stamford, are good specimens of work, designed by Alfred Brown. These are but a few among many objects of art-work exhibited by this firm and executed at their own manufactory.

Elkington has also a great many beautiful pieces of work: the table presented to the Princess of Wales, and which was in the London Exhibition of 1862, several cups, tankards, and dessert-services of excellent workmanship; but above all, a splendid shield, in silver and iron repoussé; it is of oval form, the iron beautifully damascened with gold, and has three large panels in silver. The subject illustrated is Milton's "Paradise Lost," and the design and execution reflect the highest credit on the artist, Morel la Denil, who has been rewarded with a gold medal. In one costly dessert-service for an Indian merchant, the central and principal piece, a cup, was made in gold, enriched with some very fine enamel; another service in oxydised silver, gilt in part, for Mr. Graham, M.P., was very rich and elegant. Elkington shows also a number of specimens of electro-plate of very good quality. Hancock has several large pieces of silver work, placed in two different stands. The most important is the Tennyson vase, modelled by Armstead, and illustrating subjects from Tennyson's poems—the parting of Arthur and Guinevere; the ornamentation is described as being in the twelfth-century style; it is original and well executed. Mr. Emanuel exhibits several pieces of silver repoussé work, by Pierpoint, a shield and four plateaus. The shield, in oxydised silver, partly gilt, is elaborately chased; it represents scenes from Shakespeare, but can neither, in drawing or finish, compare with the Outram shield just facing it, or the Milton shield in Elkington's stand. Another object exhibited is a large bloodstone, mounted with foot and handles, to resemble a cup; the figures serving as handles, as well as those on the foot, are, like the other parts of the mounting, made in 22 carat gold and repoussé.

A large silver swan created great sensation among a certain class of visitors, and caused at certain times of the day a number of people to crowd round Emanuel's stand. It used, at stated hours, to perform certain movements by means of mechanism inside, and was no doubt a clever piece of skilled mechanical work.

Phillips, of Cockspur-street, has in the way of silver work a copy, on a reduced scale, of course, of the cross lately erected in front of the Charing-cross railway station; it has been elaborately executed by Barkentin.

Benson sends some very handsome wood caskets, mounted with ornaments in precious metal. The one in which the freedom of the city of London was presented to Prince Alfred is especially worthy of notice; it is made of oak, and most skilfully mounted with gold ornaments, light, and graceful in design.

There is some very good silver plate, of a commercial character, exhibited by Watherston, also noted for his chains.

Of ecclesiastical plate, some good plain work is shown by Hart and Son; likewise by Hardman, of Birmingham, who has sent a Gothic cup with cover, of a very elegant design; it is in silver, gilt in part, enriched with stones, and the minute details of the Gothic style are carefully executed.

Close by is the collection sent by the Society of Arts, including specimens of prize work, as well as the Swiney cup, designed by MacIise, R.A.

Several specimens of prize work are also sent by the Architectural Society, among them a highly-finished head of Germanicus, in silver repoussé, by Holliday.

Belonging to the English exhibition in Class XXI. is a large collection of racing-plate, sent by the owners, and forming an attractive and showy exhibition by itself, in the large "street" separating France from England, facing the Pont de Jena entrance. It consists of from forty to fifty pieces of plate of various kinds—vases, tazzas, tankards, groups, statuettes, shields, &c., but all described here as "race-cups." They have been made since 1855, several as late as 1866, and therefore may be taken to represent the present state of English manufacture of the larger kinds of silver work. In value they vary from £100 to £300. They have been made by different manufacturers. I believe every manufacturing firm in London, and several in the provinces, are represented; and we must therefore expect to find them of very unequal merit as regards design and workmanship. While some are elegant in form, with well-modelled sculpture, tastefully ornamented, and enriched with appropriate gilding, others are coarse and badly modelled, with very inferior chasing and mounting. It appears to me a pity that a judicious selection was not made among the objects offered for exhibition, so that the thoroughly discreditable ones might have been left at home.

It was very interesting, after having seen the objects sent to the Exhibition by the different nations, showing the present development of the goldsmiths' trade, to pay a short visit to some of the fine specimens of goldsmiths' work in the "History of Labour" gallery. France and England had sent many objects in precious metals; and of large objects in silver, England had the best show. There is a large looking-glass frame, in hammered silver, with children playing between festoons of flowers and fruits, and surrounded with vine and rose-leaf borders; it belongs to the Queen, and is about the date of 1670. Also a wine-fountain, some 5ft. high, with bold gadroons, and deep twisted flutes elaborately hammered on the body. Two wine-bowls, of immense size, likewise hammered with great skill. The three last-mentioned pieces belong respectively to Lord Spencer and Lord Chesterfield, and date from 1702 to 1710. Comparing these objects with the larger work of present manufacture, we find that while in the old work the hammering is principally depended upon to produce effect, and is exceedingly well done, in the modern large work sculpture enters to a greater extent, and chasing and engraving are more employed. We observe also a very great progress in the art of casting (to cast well is an art): where any cast parts, such as handles or feet of the bowls were used in the just mentioned old pieces of work, it showed very great defects, while the soldering cannot bear

polished, burnished, oxydised in all shades, and gilt silver work, there are in Christoffe's stand to be found several pieces of artistic work of a yellowish white colour, somewhat like a cream-colour; it shows the chasing to great advantage, and retains more of the natural character of the silver than the dark, often lead-looking oxydation generally applied to artistic work.

This would perhaps be the place to mention that casting is much better done in Paris than in England. I saw many specimens of cast-work, both in the Exhibition and in different ateliers, among others in Barbédienne's; they were cleanly moulded, sound in the metal, and of even thickness: figures were, without exception, "core-cast," the practice of casting them in a multitude of pieces, to be soldered together, having long been abandoned in France, as it was found almost impossible to avoid injuring the figure by this process.

The cost at which silver work is produced in different countries varies considerably, and is affected by a number of causes, such as wages, cost of materials, duties, employment of machinery or adaptation of labour-saving processes. It is hardly possible to establish any comparison between the prices of exceptional pieces of art-work; sometimes they appear enormously high; for instance, 10,000frs. for the coffee-service in Louis XVI. style, exhibited by Christoffe; yet they are often produced at a loss even—the manufacturer depending on an indirect profit rather than a direct. If not ordered, they are likely to remain a long time on hand, and serve principally to establish or maintain a reputation. In the more ordinary kind of silver-work for the dinner or tea table, it is not so difficult to arrive at a comparison. Some of the English work of that description is very good; plain forms, easily kept clean, extremely well polished; in some instances beautifully engraved, and very substantial. They cannot be matched by any from the Continent; but their price is naturally much higher. Their heavy weight forms, of course, an important item in this respect. In France they are produced cheaper, and in other countries still more so; but nearly always considerably lighter. Wages are, generally speaking, higher in England than on the Continent, although a good increase has taken place—especially in France—during the last twelve years. Six francs per day was, previous to 1855, a good remuneration for a first-class silversmith in Paris. I was now informed, both by workmen and masters, that they were receiving 8frs., or 50frs. per week of sixty hours, and with increased pay for overtime; the same was paid to first-rate chasers by M. Barbédienne and other bronze manufacturers. In Germany, wages are much lower; and if we take Denmark, whose show of excellent table-plate I have noticed above, we find there that a good silversmith at Copenhagen is paid about £1 sterling per week, in exceptional instances, 25s. to 30s., enabling him to live comfortably there. It is difficult to say what is the average pay in a trade where there can be no approach to a uniform rate of wages, as in the building trades. The individual skill and ability vary greatly, and with them, of course, the value of the workman's labour. Christoffe, in the introduction to Class XXI., in the catalogue of the Exhibition, puts the average pay of French silversmiths ("Orfèvres") at 5frs. per day, but in this term are included the many thousands engaged in the German-

comparison with the clean, sound, and perfect soldering with which we now join the different parts of a piece together.

The considerable amount of work in precious metal exhibited by India, might perhaps just as well have been arranged in the History of Labour as among the modern work; they are, in a great measure, old objects, and, even when new, they do not deviate from the style and manner of execution which for centuries have formed the characteristics of Indian work. It is, however, a very interesting collection, containing examples of carved, chased, engraved, and inlaid gold and silver work, all distinguished by its wonderfully minute ornamentation, and, in some instances, as the incrustation of gold in hard stones, illustrating methods of work unknown in Europe.

Taking a general view of the whole class, we see at once that France and England occupy the first rank as producers of high-class art-work in the precious metals; and of the two, the superiority must be acknowledged to be on the side of France; this fact has been fully recognised by the best English firms, who have, much to their credit, secured the services of some of the very best French artists and art-workmen, and at great sacrifice produced works of the highest character.

The result is that we see in the English part of the Exhibition several specimens equal, or even superior, to any in the French: but they must be looked upon as exceptional instances. If we ask how far the presence of Vechte, Morel la Deuil, and other French artists in England, has influenced the character of English work, it will be seen that their manner of finishing the work has been, to some extent, adopted and followed. The coarse hard mat, for so long time applied to figure-work, is gradually disappearing before the softer, fleshy-looking texture produced by careful tooling, which the French chasers do to such great perfection.

As far, however, as the style of art or choice of subjects is concerned, the English artists have very properly not followed the French. The Outram shield, the Kean and Lawrence testimonials, or the Tennyson vase, do not show any trace of French art in conception or modelling; and, whereas in the French work the subject illustrated is very frequently taken from mythology, we find in the English that the great majority illustrate historical subjects, giving them often an additional interest; this is especially to be seen in the collection of English race-cups.

A characteristic fact to be observed in the present Exhibition, is the great increase in the employment of enamel, as applied to silver work; it is especially in the French work that it is to be noticed, but it has also spread to England, though much may be said against employing enamel to a tea or coffee-pot: it is liable to chip, troublesome and expensive to repair; however, many such objects are enamelled, and a great improvement in the colours of the enamel is also visible. In the large manufactory of M. Barbédienne, enamelling was carried on to a great extent: several vases, nearly 3 ft. high, were being enamelled in one piece.

As regards the colour of silver work, we see great variety and some novelty in the Exhibition, and here again it is the French manufacturers who claim the principal part; besides the dead white, scratch-brossed,

polished, burnished, oxydised in all shades, and gilt silver work, there are in Christoffe's stand to be found several pieces of artistic work of a yellowish white colour, somewhat like a cream-colour: it shows the chasing to great advantage, and retains more of the natural character of the silver than the dark, often lead-looking oxydation generally applied to artistic work.

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The cost at which silver work is produced in different countries varies considerably, and is affected by a number of causes, such as wages, cost of materials, duties, employment of machinery or adaptation of labour-saving processes. It is hardly possible to establish any comparison between the prices of exceptional pieces of art-work; sometimes they appear enormously high; for instance, 10,000frs. for the coffee-service in Louis XVI. style, exhibited by Christoffe; yet they are often produced at a loss even—the manufacturer depending on an indirect profit rather than a direct. If not ordered, they are likely to remain a long time on hand, and serve principally to establish or maintain a reputation. In the more ordinary kind of silver-work for the dinner or tea table, it is not so difficult to arrive at a comparison. Some of the English work of that description is very good; plain forms, easily kept clean, extremely well polished; in some instances beautifully engraved, and very substantial. They cannot be matched by any from the Continent; but their price is naturally much higher. Their heavy weight forms, of course, an important item in this respect. In France they are produced cheaper, and in other countries still more so; but nearly always considerably lighter. Wages are, generally speaking, higher in England than on the Continent, although a good increase has taken place—especially in France—during the last twelve years. Six francs per day was, previous to 1855, a good remuneration for a first-class silversmith in Paris. I was now informed, both by workmen and masters, that they were receiving 8frs., or 50frs. per week of sixty hours, and with increased pay for overtime; the same was paid to first-rate chasers by M. Barbédienne and other bronze manufacturers. In Germany, wages are much lower; and if we take Denmark, whose show of excellent table-plate I have noticed above, we find there that a good silversmith at Copenhagen is paid about £1 sterling per week, in exceptional instances, 25s. to 30s., enabling him to live comfortably there. It is difficult to say what is the average pay in a trade where there can be no approach to a uniform rate of wages, as in the building trades. The individual skill and ability vary greatly, and with them, of course, the value of the workman's labour. Christoffe, in the introduction to Class XXI., in the catalogue of the Exhibition, puts the average pay of French silversmiths ("Orfèvres") at 5frs. per day, but in this term are included the many thousands engaged in the German-

silver and plated goods trade. In England the average lies between 30s. and 50s. per week, with exceptional instances of both higher and lower rates.

At first sight, it would perhaps appear that as silver is, strictly speaking, about the same price all the world over, the cost of the material of which silver ware is made could not have any great influence on the relative price of the work made by different countries. Custom or laws have, however, established different qualities or alloys of silver in which the manufacture is carried on. These vary greatly—from 950 parts of fine silver in 1,000 parts, which is the French standard, down to 700, or even less, in some parts of Germany, making, of course, a great difference in price. But few countries have any really well-organised system of controlling the standard of work; some have regulations, but do not enforce them. In France, both gold and silver are subject to compulsory control, to the great advantage of the trade. Here, in England, silver is also subject to control, and bound to contain 11 oz. 2 dwt. of fine silver in the pound troy, equal to 925 parts in 1,000; but, with a strange inconsistency, gold is not so subjected, and the consequence is that gold objects are frequently advertised as being "fine gold," "solid gold," &c.: which do not contain perhaps a fourth or a sixth part of gold. It would no doubt be to the great and permanent advantage of the trade, as well as of the public, to regulate the controlling of all gold work, similar to what is done with silver work. In France the introduction of stringent laws, that gold must not be worked of a less quality than 18 carat, was followed by an astonishing increase of manufacture and of exports. Some countries, for instance the United States of America, have no regulations whatever—neither optional nor compulsory control: each manufacturer works in the quality best suited to his class of customers, and marks it himself, whether correctly or not depends upon his conscientiousness. It is needless to say that this is very unsatisfactory.

I append a table, showing the standard of the silver work of the different countries, as far as I have been able to ascertain:—

TABLE

Showing the standard of the silver work manufactured in the principal countries; some of these allow more than one standard to be used, and the difference is indicated by the marks affixed to the work by the controlling authority.

Fine silver = 1,000.

Austria	.	.	.	.	.	.	938
"	.	.	.	.	.	.	812
Bavaria	.	.	.	.	.	.	938
"	.	.	.	.	.	.	812
Belgium	.	.	.	.	.	.	833
Denmark	.	.	.	.	.	.	827
England	.	.	.	.	.	.	958*
"	.	.	.	.	.	.	925†
France	.	.	.	.	.	.	950
"	.	.	.	.	.	.	800

* Britannia silver, little used.

† Sterling silver.

Holland	938
"	833
Italy	812
Portugal	845
Prussia	750
Rome	875
Russia	750
Spain	750
Sweden and Norway	827
Switzerland	875
"	833
"	750
Wurtemberg	812

While on the subject of the quality of the silver, we may also notice the duty upon it, as this is generally paid at the time the control mark (hall-mark in England) is affixed. In England, the enormous duty of 1s. 6d. per ounce is levied, a small drawback being allowed if the work be sent to the hall in an unfinished state; in France it is 12fr. per kilogramme, or about 4d. per ounce, and it is less in many places. Comparing London to Copenhagen, we see that an ounce of sterling silver, including duty, is worth 6s. 9d., while an ounce of the silver of which the Danish work is made, containing about 830 parts fine in 1,000, is worth 4s. 6d., an important fact to remember when the price of silver work in the two countries is compared.

Among other materials used in the silver trade, and tending to affect the cost of the work, are gas and charcoal; the latter very expensive in England, and dearer than on the Continent.

Machinery is not employed to any considerable extent in the manufacture of silver work, if we except certain specialities, such as spoons and forks: and even of these many are still made by hand, although the ornaments on the handle are generally produced by stamping, or by letting the object pass between rollers in which the pattern is cut. Much common work made in Germany is also stamped, such as we saw in the objects sent from Berlin; but in the production of silver work of a high character, machinery performs but a small part. Large and expensive pieces of silver work are in most instances designed to illustrate some particular subject in connection with the persons for whom they are being made, or to whom they will be presented, and may perhaps never be repeated, so that the principal reason for using machinery, which is to produce a multitude of the same articles cheaper than can be done by hand, does not exist here. Among processes tending to economise labour, I found in Paris the process of "spinning" extensively employed in all the ateliers I visited in our trade: and it is likewise in general use in Germany and Denmark.

The process of spinning (*repoussé sur tour*) consists in "raising" the work from a flat plate to the form required, over a chuck on the lathe, instead of by the more laborious method of hammering. It was first introduced at the time when the manufacture of plated work commenced, perhaps some forty years ago, or rather more. The silver outside the

copper being very thin, the removal of the unevenness and marks left by the hammer was likely to take the silver off in places and expose the copper; by spinning, on the contrary, it is possible to get a smooth, uniform surface, as the raising is done by means of well-smoothed and polished steel tools. Since electro-plate has taken the place of the original plate, and the work is more often executed in brass, or German-silver, than in copper, and plated after being hammered instead of before, spinning has to some extent been superseded in that branch, by stamping the work into its shape. The untractable nature of German-silver (or nickel silver) renders it less suited for spinning than the pure copper; but for such good quality of silver as is used in France and England the process is well adapted. In Christofle's great manufactory, I found that even very large objects, such as dish-covers, were spun, both oval and round, the lathes being moved by steam power. M. Hugo, mentioned before as a manufacturer of good dinner and tea services, also employs spinning to a large extent: all the bodies of the different pieces, coffee and tea pots, sugar-basins, &c., were spun; some of them were 7 in. or 8 in. high, with large bellies and long narrow necks, yet they were spun in one piece, over a wooden chuck, made, of course, of many pieces, to enable its being taken out when the work has received its form. Where a great number of objects are expected to be wanted of one pattern, the chuck is sometimes made of brass, which, of course, lasts longer than wood; but generally good hard wood answers all necessary purposes. The objects spun were considerably lighter than English work is usually made; but M. Hugo informed me that both for France and for exportation lightness was required, and that he, in fact, had difficulty in getting the work light enough. Sets, consisting of coffee and tea pots, sugar-basin and cream-jug, weighed 2 kilogrammes, or sometimes under, and were sold at a price considerably below what is paid in England.

Soldering is done in Paris, as in England, by means of gas, the supply of which seemed scarcely so large in quantity as it generally is in English workshops. In Christofle's place, the necessary atmospheric air for the soldering-gas was furnished by a blowing-machine, saving the workman the operation of treading the bellows, which, in cases of soldering large pieces, taking a long time to get hot, produces considerable fatigue, and even nervousness.

I have already remarked that English work is generally well polished: in many continental countries burnishing, of necessity, takes the place of polishing, on account of the silver being of an inferior standard. To give this the appearance of fine silver, an artificial white surface is produced, by making the work red-hot, in which state the copper in the outer portion of the silver becomes oxydised, and this copper oxyde is easily removed by leaving the work a short time in some weak acid, generally diluted sulphuric acid. Thus a very thin coating of fine silver remains on the surface, which may be increased by a repetition of the same process; but is still so thin that the use of the grinding powders, rottenstone and rouge, used in polishing, would soon take it off and expose the natural colour of the material: it is therefore necessary to brighten it by rubbing the surface with bright steel burnishers.

generally finishing with a highly-polished bloodstone : but on large plain surfaces the effect is very inferior to that produced by polishing.

One of the most important questions affecting the workman, and consequently also the work, is that of his education, both general and special. Leaving the first as much as possible aside, as beyond my province, and confining my inquiry and remarks to the state of special education, I must own that in England the means of artistic and technical instruction or education within the reach of a workman are lamentably deficient compared with some other countries. Much has certainly been done of late years by the Schools of Art at South Kensington, and by those in connection with them all over the country, and facilities offered for instruction in drawing and modelling which did not exist before ; but, valuable as they are, I think that the instruction given is more calculated for art-designers and draughtsmen than for workmen, who, after having received a knowledge of elementary drawing, should have opportunities of a more special training, according to the business in which they are engaged.

Taking my own trade as an instance, instruction in engraving, chasing, turning in wood or metal, spinning, enamelling, and some chemistry, so far at least as to understand the properties of the metals and acids, ought to be within the reach of every young workman, besides drawing and modelling. Schools in which such instruction is given exist in many countries, and several have sent specimens of their pupils' work to the Great Exhibition ; they are arranged in Class VIII., and I may perhaps be permitted here to draw attention to a few of them. The specimens sent from schools in France consist more of products of a higher class of art-designers—drawings and sculpture ; but there is a very interesting collection, by individual art-workmen, exhibited in the French part of this class. Prominent are the works of M. Philippe, who has been rewarded by a gold medal, and who exhibits many original designs and models for execution in gold or silver, also many finished pieces of the most elaborate and artistic workmanship ; two beautifully-chased jewel caskets, one of them enamelled ; some pretty enamelled candlesticks, crosses, etc. ; several cups in iron, with silver mounts ; a cup in amethyst, mounted with gold and silver ; and a very grotesque looking-glass frame, with dragons, monkeys, squirrels, birds, and other animals, introduced in the ornament in great profusion and with splendid effect. Several of Philippe's handsomest works I noticed had been bought for the Royal Museum at Berlin. Here is also the case of M. Boucou, the art-workman who boasts of having revived in France the ancient damascene, in which the gold or silver is laid on the surface of the steel or iron instead of being inlaid, and which art has also been, to a considerable extent, patronized in England, as may be seen in Hunt and Roskell's and Elkington's stands ; he has exhibited many beautiful small damascened objects, the ornaments cleverly drawn after Veechte's style. Several pieces were also shown by Dufrene, among them a very striking cup, called the "Cup of Pleasure," intended to illustrate the chastisement of guilty pleasure ; it is very large, but somewhat coarse in design. Here are also several specimens of excellent repoussé, in copper, in different stages of progress ; among them, a beautiful work,

by a workman, Faraoni, who obtained for it the prize "Crozier," given for the best work in a competition of Paris workmen; it has the portrait of the Imperial Prince in the centre, surrounded by fine arabesques; the ground is dotted with bees, inlaid in gold; the face and the hair exceedingly well-chased, soft, and delicate, and the ornaments light and pure.

Among other countries, Wurtemberg and Denmark, both remarkable for the taste and workmanship of the objects of ordinary silver-plate shown in the Exhibition, have shown interesting specimens of work executed in their technical schools. The collection sent from the Wurtemberg parish-schools for workmen is very complete and well arranged; besides specimens of drawing and modelling, it also includes some of chasing, hammered copper, carpentry, wood and stone carving, cabinet making, &c.; each object is marked with the name and age of the pupil, in most instances, an apprentice.

These schools were organised in 1848: 101 are now in operation, giving instruction to upwards of 8,000 scholars, who pay a small fee, part of the expenses being borne by the state, at an annual cost of £2,300. In many towns, Sunday classes are in operation, and much frequented by young workmen.

The Technical Institute at Copenhagen also exhibits specimens of pupils' work in great variety; the instruction is specially intended for apprentices, and is therefore given in evening classes, between six and ten o'clock; a small fee is required for each branch of instruction, and the pupil must have attained a certain efficiency in drawing before he can participate in the more technical instruction. Specimens are exhibited of drawings, geometrical, perspective, mechanical, freehand, &c., modelling in wax or clay, turning in wood and in metal, chasing, cast as well as embossed, engraving, spinning in brass or copper, &c. Those desiring a higher artistic training, attend the evening classes of the Royal Academy, which institution has always had a great influence on the work produced in Copenhagen; in the year 1800, a Royal decree even compelled the goldsmiths to let their apprentices attend these evening classes; since the establishment of technical schools, it has, however, not been enforced.

The Sunday-schools in different towns of Denmark, for the gratuitous instruction of young workmen on Sunday afternoons and evenings, have likewise sent a collection of drawings to the Exhibition, and are well attended throughout the year; they give annual prizes to the best scholars.

I have selected these countries as examples of what may be done for the technical education of the artisan; and I trust that something may be done in England, and particularly in London, to meet a great want. Such institutions would require some encouragement and support, at least in the beginning; but it would, no doubt, be amply rewarded. There could, in my opinion, be no more legitimate way of using some of the great means at the disposal of many of our old and wealthy City companies than the encouraging and assisting schools where the apprentice in the trade with which the particular company may be connected could receive a thorough artistic and technical training. A few hundred pounds annually would go a great way, and how little would that be in the total

and expended by them? Their wealth has been made in connection with a trade; and now we find them, with very few exceptions, not doing anything at all for the good or advancement of that trade.

It is, of course, during the period of apprenticeship that this instruction should principally be received; and here I would observe the fact that this period is in England longer than in almost any other country, seven years being the usual term, sometimes in reality much longer, as a boy is often taken into the shop at the age of ten or eleven years, when he ought to be at school and at play, and remains, of course, until he is twenty-one. In France I found the term varying in our trade from three, four, to five years, the latter being the maximum period, and the one adhered to by most continental countries. It begins at the age of fourteen, and finishes at nineteen. The young workman then frequently travels for a couple of years—an excellent way of improvement, very rarely resorted to by English workmen, in our trade at least. Being a man of full age before he can become a workman, the English artisan not unfrequently marries shortly after the expiration of his apprenticeship, if he has not already done so before, and, finding wages lower abroad than at home, sees no inducement to leave his place.

In some countries great encouragement and even pecuniary assistance are given to young workmen desiring to visit other places.

On the general question of trade associations—a subject occupying just now the mind of every thoughtful man, from peer to artisan—I do not consider it the place here to enter at length, and shall only notice it so far as it may affect the special branch of trade it has been my task to inquire into.

Combinations of workmen for trade purposes have been permitted in England only since 1825, and if anything could in some measure palliate the frightful abuses which, in too many instances, have been made of this permission, it would be the reflection upon the despotic and arbitrary way in which the workmen had hitherto been treated by the legislature. This cannot, however, be used as a justification of the tyrannical sway the trade unions now claim the right to exercise alike over the workman and the employer, and still less of the means by which they endeavour to enforce obedience to their decrees. Happily, in our trade, there has existed for many years the best understanding between the employers and the workmen. A trade society exists, whose object is to support workmen out of employ, and at one time it numbered several hundred members; at present, however, not more than about forty to fifty; and having a large capital at command, the few remaining members are enabled, without paying any heavy contribution, to enjoy themselves in a convivial manner, becoming shareholders in the Crystal Palace, and life-subscribers to an excellent pension society, which gives annuities to aged and infirm workmen in the silver trade and their widows. I believe it has also, in a few instances, assisted a member to emigrate. The pernicious agitation to obtain a uniform rate of wages, which is a main object in several trade unions, has never, to my knowledge, been encouraged by this society; and such a system could hardly be applied to a trade where the skill and taste of the individual workman must necessarily vary much and make a difference in the class of work he can be employed on.

Associations of workmen are also now permitted in France (since 1864), in Prussia (since 1865), in Belgium (since 1866), as well as in other continental states, where previously they had been prohibited, though the authorities keep a watchful eye over their movements; but in no country have they obtained the same development and character as in England. In Paris, a society of workmen in the silver trade has been formed for the purpose of assisting men while out of employ, in which case they are paid two francs a-day. It does not appear to be conducted in a spirit antagonistic to the employers, and is moreover obliged to inform the authorities of any intended meeting, and allow the presence at the meeting of a police officer, should it be thought proper to send one.

Such is also the case in Prussia: both in Berlin and the provinces trade societies have been established, but the government keeps a strict surveillance over every action or movement on their part. Another kind of association, for mutually assisting the members by loans, has lately sprung up in Prussia, and has met with the approval of the government; but these are in no sense trades' unions as that term is understood in England. They are, in principle, not dissimilar to the "Friends of Labour" association here, although perhaps better organized and more economically administered. In some countries—Russia and Austria, for instance—combinations of workmen for trade purposes are still illegal, and the right of the workmen to associate for any object of common interest most unjustly withheld.

There can be no doubt that the English workman is in several respects better placed than his continental brethren; he is, generally speaking, better remunerated, and the hours of labour are less in England than in most countries. In Paris, however, the system of fixing the week at sixty hours has been almost universally adopted in the silver trade within the last few years. The English workman also, as a rule, enjoys complete rest from labour on the Sunday, and has, moreover, the benefit, in most trades, of a half-holiday on the Saturday, leaving him considerable time at his disposal for instruction, rest, and recreation: he enjoys full political and civil rights, liberty of association, and equality with his master or superiors before the law of the land: along with all his countrymen, he is exempt from that great drawback to most continental workmen's liberty—the liability to military service; and of late years many men of the highest class have taken the greatest interest in his welfare and improvement.

On the other hand, his mode of living is more expensive than that of the continental; his amusements are often of a coarse character, although every one must have noticed the wonderful amelioration which has taken place, and is still going on, in this respect. The French workman is certainly more frugal and temperate than the English. I think that he also economises his earnings better, and more frequently succeeds in becoming an employer himself, which, it must be admitted, is not so difficult in Paris as in London, as far as regards our trade. He is generally a pleasant and obliging shopmate, fond of amusements, which are amply provided for him, his principal day of amusement being the Sunday.

On so controversial a subject as the Sunday question, I shall not be able to enter further than to state a few facts, already well known. Both

in France and Germany, as well as in most countries on the Continent, the Sunday is the chief day of pleasure for the working-classes. Theatres, concerts, and all other amusements, are then in greatest request; but I do not think that so much work is done in Paris on Sunday as is generally supposed. I know many workshops in the silver trade in Paris where Sunday work is as rare as in those of London. Just previous to the opening of the present Exhibition, a well-known manufacturer of artistic silver work, whose name has been mentioned in this report, required his workmen to work a couple of Sundays to get the work ready for the Exhibition: for this he paid them *treble wages*, showing, without further remark, that Sunday work is of an exceptional character. It is more general in other trades, but Sunday is, in all, considered as a holiday. From the early morning I saw the workmen, with their families, making their way to the Champ de Mars by thousands; and many had an opportunity of seeing the grand show who would not have seen it if it had remained closed on the Sundays. There were thousands of London workmen that did not see the Exhibition of 1862 because to do so would involve the loss of a day's wages. One of the Sundays I spent at Paris happened to be the one on which the "fête" of St. Louis, the patron-saint of France, was celebrated at Versailles, by illuminations of the grand fountains in the park, as well as fireworks provided by the town authorities. The number of people present was enormous, and they were enjoying themselves in the most harmless, almost childish, manner; and had the festivities taken place on a week-day, it is probable that not one-tenth of those present would have been able to see them. The opening of all art collections and museums on the Sunday also enables many working people to benefit by them, which would not otherwise be the case.

I have stated the above facts merely as such, and not as a pattern for an English Sunday. I do not advocate the introduction of the French Sunday in London, where it would be as much out of place as an English Sunday in Paris. What answers in one country may not answer in another: and I do not forget that the keeping of the Sunday as a day of complete rest has been the principal cause of procuring for the working people the Saturday half-holiday, unknown in France. But I think that when public opinion shall have advanced so far as not to oppose the opening on Sunday of the British Museum, National Gallery, Kensington Museum, and similar institutions, such an act would be received with gratitude by the working-classes, and naturally assist in cultivating their taste. Hampton-court and Kew-gardens are much patronised on a Sunday, although their distance from the metropolis must prevent many from ever seeing them.

In concluding this report, extended in length far beyond my intention, it would be great neglect on my part not to express my thanks to Mr. Haussoullier, at the Workman's Hall, for his kindness, and the trouble he took to procure my admission to such ateliers as I desired to visit; and to acknowledge the civility with which I was received at every one of them. The Workman's Hall itself was a great assistance and convenience to the British workman, for whom, I consider, more had been done in that respect than for any other.

SILVER WORK.

By GEORGE PAGE,

SILVERSMITH.

IT is gratifying to perceive, after passing a studious examination of the works of my respective branch in the Exhibition, that the most remarkable surface finish, as shown in repoussé, with some most excellent specimens of cast surfacing, are exhibited by English manufacturers; but I must add, that the most admired works exhibited by them have been worked by French and English artists and artisans combined. I say this, knowing the works to have been executed by them. I find the French artisans are in advance of those of other nations, with regard to the art of surface-finish in my respective branch. Their variety of tasty designs and designed textures, show admirable tact on the part of the workers. With respect to their mode of producing surface relief, in some instances they, instead of raising the ornamentation out of the substance of the form, stamp it up in dies, after which they perforate the ground from the stamped ornament, and solder the ornamentation on the surface of the form. Where the relief is required of a superior character, the first models are highly finished, and reproduced in silver by the electrotyping process. Medallions and the like reliefs are made by this process and applied in the aforesaid manner. The patterns, of course, are modelled to suit a certain form. The gain of this mode of producing is evident; the form of the ground work is undisturbed by the beautifying of its surface.

With reference to their conditions and division of labour, they begin work at six o'clock in the morning, and work till six in the evening, twelve hours per day, out of which they are allowed one hour; that is generally taken between ten and twelve o'clock. Their average earnings are from three to ten francs per day; spinners, from seven to eight, turners, from four to six francs; mounters and surface-finishers, from eight to ten francs. Spinners are those who fill the place of silversmiths to a great extent, who, instead of raising the silver to the form by the hammers, press the silver up over wooden shapes on the lathe by steel burnishers. Designs that are circular in form are generally made by the said process.

With respect to other matters I beg to be excused, not feeling able to fairly treat them, my stay not enabling me to acquire full information on such subjects.

SILVER-CHASING.

By R. E. BARRETT,

SILVER-CHASER.

FRANCE.

CHRISTOFLE et Cie.—The dessert-services of this firm are of a very superior class. They are extremely ornamental, with but one or two exceptions. Their mode of manufacturing them is rather different to ours. They pay a good price for the original to the artist, after which they give it to some of their most clever chasers; consequently a good thing is turned out, and they immediately cast a number of them in silver; these they give to the common hands to chase, and by this means they present their customers with a moderately cheap article. The French chaser seldom uses a mat, as we English ones do; but instead he uses tools of his own making, with fixtures on them to suit his own taste. The casters are a more careful class of men than our own. This is a great boon to the chaser, for he is consequently enabled to repair his work in a better manner than we are, and quicker also. Very little thickness-work is done in France; they core-cast instead. A deal of electrotyping is done by this firm. The following articles are of a very magnificent character:—

Tea-set—elaborately traced with ivy, and kettle to match; the ground is burnished and the ornament coloured; a kettle accompanies the set, and is of the same rich pattern.

Indian waiter.—The ornament burnished, and the ground engine-turned. It is perfectly flat—no raised work about it at all.

A small egg-cup, in the Italian style.—It is cast from a metal pattern and beautifully undercut, the ground picked, not matted. I should imagine the artist who designed it must have modelled its ornament on a hammered body, and by that means got the inside of the egg-cup smooth; that, of course, would save lining it, and any number might be cast complete.

Chinese waiter, with a correct pattern and dragon handles. This waiter is chased in a very good style; the workman seems to have tried to produce an entirely Chinese effect, by detailing the ornament with bold, blunt tools and peculiar mats. The tea-flower is interlaced on the bottom of the waiter.

A Japanese waiter to match, and a Turkish ewer and basin, Greek tea-sets on a table to match, and an urn, which is somewhat Indian in

character, through having elephants' heads on the handles. There is some very pretty engine-turning about them, picked out with stars.

Grand war trophy.—The horses and figures are very carefully chased, although they strike the eye as being coarse. Great attention has been paid to the drapery and extremities of the figures, but the architectural part of the trophy is coarse and slovenly in execution.

Duponchel.—This firm also exhibit some fine chasing. An iron shield, with a subject from the heathen mythology, numbers of cleverly embossed figures and animals, and faint damascened work. A Japanese tray, with birds amongst the ornament. The French pay much greater attention to their common run of work than our manufacturers do. The patterns of the waiters, tea-sets, &c., are all perfect and of a refined design: for instance, their commonest vine dessert-services are thoroughly well modelled and carefully textured.

Turkish tea-service, partly gilt, with kettle to match, and perforated tray, carefully chased.

Fanniëre, Frères.—An iron shield: subject, "The Avenging Angel." A tea-set, with tea-leaf conventionalised, and a splendid tureen with bear-hunt on top. They have a peculiar method of finishing their annas: they leave the hair massed, and give it a spirited touch here and there, leaving some good broad surfaces, which is very refreshing to see, after looking at our own door-mat kind of surfaces.

Marrel et Fils.—A Turkish arm-chest, with bas-relief of fights; beautifully chased in an antique style, and a panther hunt of an Arabian character is introduced.

Rose-water jug and dish, repoussé, the subject being the Combat of Pigmies.

Odiot.—This firm has good work to show.

Thiery.—This firm makes church-plate chiefly. They show a very beautiful tabernacle in silver.

Rudolphi exhibits a vase, which is carefully chased; also a shield, tazza, and a multiplicity of other articles, all carefully finished.

DENMARK.

The Danes seem to finish their work in a mediæval style.

PRUSSIA.

Sy and Wagner, and Horn.—An historical shield of Berlin, well chased, but a little too plain in surfacing, which is a fault which all foreign chasers seem to possess, resulting from their fear of departing from the original model. It is a good fault.

ENGLAND.

It would be superfluous to report upon the work of the English; none can possibly surpass the Breadalbane plate of Hunt and Roskell, by Veichte, and some of the productions of Elkington and Co.; but the English have not chasers to compete with the French, excepting a few who are artists.

HABITS OF THE FRENCH WORKMEN.

They are not more abstemious than we are, but the wine that they drink is lighter, and they dilute it plentifully with water. They

also great facilities for studying, all the public galleries being open to them on Sunday. They are by that privilege enabled to study the works of the great masters, which gives them a more correct idea of beauty than they otherwise would have. Then it seems to be a habit on their part to try and agree together; and, as a rule, they are not near so avaricious as the English artisans. The theatre is a place where they frequently pass their time; this also changes their ideas, and makes work not near so monotonous; in fact, the only object is with them to live and work as pleasantly as possible. They seldom have large families, as they look upon it as a drag. The workmen are all more or less gay, and seldom save money.

As to their tools, rifflers are very much used, and the tracers are smaller and more numerous than with the English artisan; and their surface-tools are paid great attention to. The patterns on them are so as to represent nature as much as possible. A large number of punches are used in work, such as stars, leaves, and geometrical patterns. There are a number of gravers used also, and the drapery of figures is frequently shaded with a sharp-pointed tool; a very coarse mat is used in representing velvet drapery, and the matting is partly erased with a punch or riffler, which gives the furry, soft surface of the velvet. Horses are seldom matted with a hair tool; instead, they use a smooth flesh tool. In working up their draperies, they are careful not to use the tracer, and a planisher is deemed a safer implement when a fold in the drapery is under-cut on both sides; but in the hair of the human head there is a tendency to make it too woolly, by putting too many frizzy holes in it; and if they were to keep it broader in surface it would be better.

ADJUSTING OF WORK.

Pitch is more sparingly used. They have a new invention, as follows:—Two holes are drilled through their bench; underneath there is a kind of vice, which tightens the strap of leather that they pass through the holes. This does away with the use of pitch, and the artisan is enabled to do away with so much moving of his work, which is a loss of time, and makes work come more expensive. The French artist is more kind and obliging to the worker than ours, and the chaser is, of course, better enabled to carry out his ideas.

Bronze works are carefully cast, and merely repaired at the seams and any other parts that may have come bad in the casting. Some of the French chasers are very good draughtsmen, and many of them model in a small way. A deal of piece-work is done, and the wages of the men average from 30 fr. to 50 fr.; but it is only very clever hands who get 50 fr. A French workman seldom tries to under-sell his shopmate, but would rather screen him. They are very fond of politics, but are assuredly not so worldly as they are said to be. Every man keeps his tools in order, and will not allow a shopmate to meddle with his tools; but if a shopmate should require the loan of a tool, he generally lends it with pleasure, and often instructs him in the use of it; and should at any time a fellow-workman be in distress, they will help him to the utmost of their power, provided he is a deserving person; but not if he is eccentric in his habits.

HAMMERED IRON.

By WILLIAM LETHIEREN,
ART-METAL WORKMAN.

I VISITED Paris for the purpose of examining and studying the department of Hammered Iron Work.

Taking the French department first, I found some good specimens by Baudrit, of Paris, viz., chandeliers, balcony fronts, &c., &c.; the surface-work being beautifully finished, showing the extensive use of files, shaping machines, &c. These works are of excellent design, and certainly productive of a beautiful effect.

It is worthy of note that very little is exhibited of genuine hammered work, as finished at the forge; and where this is the case, as in an oak and olive wreath in this department, the leaves are riveted or brazed, instead of welded, showing a great want, on the part of the smith, of power over the material he was using.

The repoussé work, in sheet iron, is beautifully executed; showing, not only the hand-work of a clever mechanic, but the finger of the artist. I found no good work in the workshop of the above exhibitor, and should have thought it second-class, had he not shown such work in the Exhibition.

Roy has some superior work, the gates especially being well-fitted and of substantial design, in the frame-work, but, like Baudrit's, shows the indiscreet use of the file. The ornament consists of thin sheet iron leaves, and, in some cases, cast work in imitation of repoussé, giving a good effect, but I should deem it wanting in durability.

On visiting his workshop, I was pleased to find it so well conducted and superintended. The foreman, who is designer and draughtsman, appears ambitious to make it a model workshop, and to all appearance has succeeded. The finished work, and that in process of manufacture, I found superior to that exhibited. The forged work was rather rough on leaving the fire, but when finished had a clean and good surface.

In the out-ground of the Exhibition I found a pair of gates that pleased me, and think the maker deserves great credit, not having the fine finish before mentioned, but left from the hammer, and simply oiled over to prevent rust. The maker was Huguet, of Paris.

The twenty-one light candelabrum, by G. Morenu, appeared a first-class piece of work, both in design and workmanship, but being suspended it was impossible to say whether it was welded or not. I should think it was like most of the other light work, riveted or brazed; if welded together, it is the best specimen in the French department.

Of the English exhibitors, the most noticeable is Skidmore, who shows a gable for the Albert memorial, which is good, considering the substance of the iron, worked in repoussé ; also other specimens that are good.

I cannot say much in favour of the Norwich gates ; it is a great undertaking, without success ; a vast amount of time spent without giving the effect I should like to have seen. To weld iron on the angle is difficult, and, if not done well, looks worse than an inferior design well wrought. This work must have been executed by an inferior workman. To compare them with those exhibited by the same firm at the International Exhibition in England, would be absurd. This applies to the workmanship.

Hart, of London, has some good work, especially a gate and candelabra ; also some door-furniture, good.

Benham and Son, of London, have some hammered iron-work ; a screen ; genuine, but not first-class workmanship.

As far as I am able to judge, the French excel in taste and effect, but I do not consider them more skilful as smiths ; in fact, I think the English excel in hammered iron-work. There is a great difference in the design. The French make their work strong and very effective, but the ornamentation, being of thin sheet-iron, is light and elegant, but forms a separate part from the other portion of the work, and consequently must decay very soon ; another fault is that, being thin iron, recourse must be had to riveting or brazing. To weld iron so thin to a larger substance would be a difficulty, if practicable at all. If iron-work is to last a long time, it must be welded together, or worked from the solid bar ; then the leaves can be made sufficiently strong to last for a number of years. I think a good design should allow of this being done, and I think, in England, good designs do so.

The skill of the smith is displayed in uniting the parts of a piece of iron-work, so that the different leaves and other parts, when completed, form a whole, blending one with the other. Then we get use, durability, and ornament combined. This, the older smiths made their study, and it should be our aim to excel them ; in this class of work, the workman must not only be practical, but have a knowledge of design and drawing. In this, as a rule, the English workmen are behind ; for we may find many a good smith, but, having no knowledge of drawing, he only destroys the good effect intended by the designer.

I think the schools of art have done much toward the improvement of the mechanic, but few avail themselves of the opportunity. The French have an advantage in this respect ; the master of an apprentice is bound by law to give him two hours a day for education ; and the class of schools formed for such have a peculiar advantage, inasmuch as the artisan is invited to bring specimens of work of whatever kind, and prizes are awarded, at certain times, to those that excel. In this respect the French are far before the English.

In France, knowledge is at a cheaper rate than in England ; when the French workman is at fault for want of some hint, he is at once relieved by applying to his school.

In England it is often found that men work for years doing work the

wrong way for want of some knowledge, which is known to only a few, and which they jealously keep secret; this is, no doubt, the reason why progress is slower here than it otherwise would be.

Another influence is, that the Frenchman has more time for study, his religion not excluding him from the museums, &c., &c., on Sundays; whether this be right or wrong (I think wrong) it certainly does not give him, as it does the Englishman, excuse for want of time.

In France, the workmen are fond of sociability and conviviality, perhaps more so than the English; but with this great difference—the English so often drink to excess; the French very seldom.

Good iron is more expensive in France than in England.

Wages are lower in France than in England. Common smiths get from 4½ frs. to 5½ frs. per day, for ten hours; good firemen, 6 frs.; strikers, 4 frs.

The division of labour is about the same as in England.

The only competitors in hammered iron-work are the French and English.

ORNAMENTAL WROUGHT-IRON WORK.

By T. WINSTANLEY.

IN my visit to the Exhibition, I was surprised to find so few exhibitors in hammered iron work, France and England being the only nations who exhibit anything worth notice. In the English department we have no improvement on 1862: in fact, a number of the articles were made for that Exhibition. The gates exhibited by Messrs. Barnard, Bishop, and Barnard, are not equal in many respects to those exhibited by them in 1862. The designer is much to blame for that, for the manner in which he has treated the material; but they deserve commendation for their attempt to weld, instead of riveting, their scrolls.

The candelabrum exhibited by Messrs. Hart is the only new specimen they have; and this is a fair piece of smith's work—in my opinion the best in the English department.

The works exhibited by Messrs. Skidmore, Benham, and a few others, seem to be specimens they had by them, without any effort or expense on their part to get up for this exhibition.

The French show they have taken great pains and anxiety to have a good display. They have spared no expense to attain their object, and they have succeeded so far as to show Englishmen they have a great deal to learn before they are equal to their French neighbours. In the most essential part of their work, that is, the repoussé work, they have arrived at such a degree of excellence as to leave almost nothing to be desired. I should like it better if they had used stouter iron. With regard to their welding, they are rather inferior to the English; but both have a great deal to learn before they are equal to the old masters.

The two principal exhibitors in the French department are M. Baudrit and M. Roy. The repoussé work exhibited by M. Baudrit is very beautiful, but the system of riveting and screwing the small pieces together is much to be condemned, and not equal to the forging of M. Roy's.

The repoussé work exhibited by M. Roy is not equal to some that was shown us by his foreman at his own show-rooms, which far surpasses anything in the Exhibition, either by M. Baudrit or any one else. This struck me rather unpleasantly, as it showed me an amount of jealousy I did not expect to find. In no case were we allowed to see the men at work on the repoussé, or rather man, for there is only one man in a shop, and very few in all Paris; but they are kept constantly employed upon this class of work, which is one of the reasons why they excel.

Another and chief reason is, they are first-class draughtsmen and modellers. When I asked the question whether these men were able to draw, the answer was, "No man can do this class of work unless he is well up in drawing," in which opinion I quite agree. I may also state here that the majority of the French working men are more or less acquainted with drawing.

Another cause for their superiority is the greater demand for good work; not because it is any cheaper, but their love of display and good taste create the demand, I believe. The number of hours for a day's labour is about the same as in England. The wages the same; that is, as many francs as shillings in London, the franc in Paris being about the same value as a shilling in London. This enables the Paris employer to compete with London with advantage.

The French Exhibition has shown us that England is far behind in art-manufacture, so that any suggestion for our improvement is worth considering. I believe the superiority of the French is owing to their education and study of their business, both in and out of the workshop, to a greater extent than Englishmen; and, under the present system, I believe they will be a long time before they arrive at the same standard of excellence, if ever they do so.

The present system of trades' unions in England is very detrimental to improvement; for this reason, they fix a certain price for labour, good and bad alike. It seems as unreasonable to me to attempt to fix a uniform rate of wages, as a uniform kind of weather. I have known a man that has been a labourer in a shop about three years, go into another shop as a mechanic, and receive the same wages as a man that has served seven years' apprenticeship, and given years of study and perseverance. Not that the labourer has been a genius, or any cleverer than the ordinary run of men, but the trades' unions compel employers to pay a certain rate of wages to certain trades; and this kind of thing is constantly done—a man worth £1 per week working next to one worth £2, and both receiving the same wages. By this means the chief inducement for improvement is taken away; for if a man's labour is worth the same to him whether it is good or bad, what is the use of improving himself? Certainly a good workman is more likely to keep his situation, but that is not sufficient.

This is only one of a number of influences at work to scotch the progress of working men. There may be some good points belonging to trades' unions, but there are a great many bad ones as they at present exist. I do not object to working men uniting, but let them unite for an object that shall be beneficial to themselves and the public, and lasting also. It is wrong for labour to unite to oppose capital, or for capital to unite to oppose labour. Their interests are so united, that they cannot fight each other without both being losers by it. Then let capital and labour unite for their mutual benefit, and then we shall soon see an improvement. If labour cannot induce capitalists to unite with it, then I would advise working men to unite and create their own capital; but in that case, the business should be carried on in the form of co-operation. Pay each man according to his merit, and let him take a portion of the profits in the same ratio.

I should like to see a number of institutions,—they might be called colleges, or any other name. I would have them fitted up with a number of workshops for different trades, and one large room to be used as a lecture-room, and for periodical exhibitions. I would have lectures delivered twice a week, by the best professors, upon different branches of art-manufacture; there should be a well-stocked library and reading-room, all on art-manufacture; there should be schools attached for drawing and modelling. Why I propose workshops is, because working men in large towns have a great difficulty in finding convenience to do anything for themselves by way of improvement. I would have the Exhibitions held for one month in each year, open to the public at a certain price, the proceeds to go for prizes to the exhibitors.

I would also have a Committee or Council, established by Government or the Society of Arts, that should receive working men presenting themselves for examination in their different branches, and grant them certificates according to their merits. There should be first, second, and third class certificates, and a national medal for great excellence. There would be a double advantage in this system: it would not only be a great inducement for workmen to improve themselves, but a great benefit to employers also; for when a man presented himself for employment, the foreman or manager would at once ask to see his certificate, and would know by that what class of man he had to deal with. At present, if there are one or two men wanted in a shop, there may be six or eight present themselves as candidates, but the employer invariably knows nothing about them, and is as likely to take an inferior man, and send a good one away, as the reverse.

I V O R Y C A R V I N G.

By JOSEPH BENTLEY,

IVORY CARVER.

HAVING availed myself of your favour of a visit to the Paris Exposition, I beg herewith to lay before you my report and observations on the articles contained in the various classes of ivory carving.

I regret to say I experienced considerable difficulty in gaining admission to the workshops in Paris where ivory carving is carried on. Although furnished by Monsieur Haussoullier with two letters of introduction, at one place I was entirely refused admission; the second was to a large wholesale firm, dealers in ivory work, in the Rue St. Martin, who are supplied by persons working at their own homes.

By chance I obtained admission to Messrs. Froment-Meurice, jewellers, in the Rue St. Honoré. They were carving two figures in ivory, to be placed on each side of a clock. The drapery was of metal, gilt; the bodies, arms, and legs, of ivory. They were very finely carved, and had occupied the artist several months. He informed me that he received 3frs. per hour, being a first-class workman. The cost of the ivory for the work was about £20. The figures, when complete, would be about 24 inches in height.

FRANCE.

Group 1—Class III.—An ivory figure of "Eve Plucking the Apple," by J. A. Cubizole; very beautifully carved, and must have taken much time and study.

Class XXVI.—In this class are carvings in ivory, by Messrs. Pousin, Chouquet, and J. Fournier, all deserving of much praise, especially some workboxes in ivory, very finely carved.

Class XLVI.—Three figures of Faith, Hope, and Charity, enclosed in Gothic niches, by Moreau. This is a very beautiful work, well finished, and must have cost much expense and labour.

ITALY.

Group 3—Class XXVI.—Cabinets elaborately embellished with ivory carved work, finely executed.

Carvings by Caruso, of Naples, very minutely finished in general details of work. All the ivory and ebony work in this class splendidly carved.

AUSTRIA.

Class III.—Statuettes by Fraenzell, of Vienna, moderately well executed.

CHINA.

Large ivory vase and basket, beautifully carved.

BAVARIA.

Class III.—Figure of Christ, by Perron (after Kuabb). This is a fine piece of workmanship.

HESSE.

Class XXVI.—The ivory carvings in this class are of moderate workmanship.

GREAT BRITAIN.

Articles in ivory, from M. Fentum, of English and foreign production; also from Messrs. Staight, figures in ivory, beautifully executed by machinery.

The above are all I observed worthy of notice.

On my way home I visited Dieppe, where I observed numerous shops well stocked with ivory goods of all descriptions. I made a purchase of a figure, and found that the principal portions of the work were done at the homes of the work-people. I also found that women and children were employed, taking a separate branch of work, and by constant practice, becoming very expert. This will explain the cause of ivory goods being cheaper than in England; living also is cheaper. The religion of the country has also some influence on the demand for ivory articles. It is impossible to give any scale of wages, as it appears to be a contract between the dealer and producer.

In conclusion, I beg to observe that I consider the encouragement given to the art of ivory carving in England, at the present time, is not of sufficient extent to bring out the real merit of the persons engaged in that particular branch of industry, as old carvings are so much sought for by dealers and connoisseurs; and I believe that, had it not been for the encouragement offered by your honourable Society, I should have remained almost unknown to the public in general, as an ivory figure carver. I wish to thank you for the honour you have conferred on me by your selection.

ENGRAVING.

By G. BERRY,

ENGRAVER.

HAVING had the honour of being selected by the Society of Arts to report upon the Engraving and Niello-work exhibited in the French Exhibition, I will do my best, although it falls short of what I could wish; having to confine myself to one of those businesses that have less specimens than almost any other branch, I feel I cannot do justice to so grand an undertaking as the Paris Exhibition, which, in my opinion, is one of the most instructive events that has taken place for many years.

On a careful inspection of the works exhibited in the Exhibition, I was much surprised to find so few specimens of Engraving, without it is Historical Engraving; that is, for the illustration of books or copies of pictures: in this branch there are some of the finest specimens ever yet produced. But as regards engraving as a decoration to plate or jewellery, the display falls far short of that which I expected to see. The watchmakers exhibit the best specimens; some very good engraving is to be found in the cases of Mr. Dent, Mr. Benson, and also in one or two other cases; but I did not see anything particularly new in the designs of the ornament. I may mention some very nicely-engraved presentation boxes. There are some very pretty monograms and heraldic devices in enamel to be found in the watchmakers' cases. The French and also the Swiss have a large collection of watches and clocks, on some of which the engraving is very good; but there is a sameness in the designs, that gives you an idea that they have all been made in one country. The jewellers have a very small display of engraving; their chief aim appears to be the display of precious stones. In this branch of art I have never seen so fine an exhibition; some of the finest specimens may be seen in the cases of Messrs. Hunt and Roskell, Emanuel, and Hancock, but there are very few specimens of engraving, the jewellery being mostly enamelled or chased, with a few exceptions, where engraving is introduced. The same rule applies to the French and most other foreign jewellers, that is, they have a fine display of precious stones and enamel, but very little engraving.

In one or two cases there are some small specimens of niello work; they are chiefly on presentation snuff-boxes, or else on some antique cups in the French department. Niello work being out of fashion, there are very few specimens; but some very good specimens may be found in the Russian court.

The English silversmiths have a very fine display of plate, but do not exhibit a good show of engraving; the chief things being, racing or presentation plate, and, these being mostly modelled subjects, there is nothing left for the engraver but the inscriptions. There are some silversmiths exhibit engraving on cups and on tea-services; but it is not so good as I should like to have seen, considering they were works of competition. The best specimens of work are to be found in the cases of the well-known firms of Messrs. Hunt and Roskell, Hancock, Emanuel, and Elkington, whose works are not to be excelled.

The French are like the English silversmiths, they have some of the finest works of art in respect to modelling, but a very small display of engraving; some of the finest pieces of silver-work are to be found at the stands of Messrs. Christofle, Froment-Meurice, and Hugo; there is some very good engraving in some of the cases, mostly on tea-services or salvers; the style of having the article polished and the engraving left dull, has a very good effect of throwing up the design of the engraving.

There is some very good work in the Austrian department. M. Goldschmidt has some of the best; in some other cases the work is very good.

The Prussian silversmiths have a fine display of plate; some of their best specimens of engraved works are to be found in the cases of M. Volkold, of Berlin, and M. Friedeberg, of the same place.

The Prussians have but a small collection of plate; their style of ornamental plate seems to be to have the pattern mostly in the style of the Alhambra, left up in relief, the ground-work being sunk and matted, which has a very good effect.

The Turkish silversmiths have a collection of cups, coffee-pots, and such like articles, but the patterns appear to have been stamped upon them; where they are engraved, the work is very inferior to that of most of the other nations. There is one piece of work, the best in this department, a copper-plate, with a bouquet of flowers engraved upon it; they do not appear to have made much progress in the art of engraving.

The Americans cannot boast of a great display of plate; they have some very good tea-services; the most conspicuous silver-work exhibited by them is, the models of two steamboats for table ornaments, which are very fine pieces of work. The best engraving they exhibit is for the printing of bank-notes, which is very good.

The dressing-case makers, &c., Class XXVI., make a good show, and have some very nicely-engraved articles.

In the English department, Mr. Leuchars has some nicely-engraved dressing-case fittings, as also Messrs. Howell and James, and Messrs. Jenner and Knewstubb, and several others. There are also some very good monograms engraved on ivory.

The French have a large display of dressing-cases and travelling-bags, on some of which are to be found some very good engravings. Messrs. Joubert have a toilet-set—a very good piece of workmanship. There are several others who have some very nice engraving.

There is also some very good work to be found in the Austrian dressing-case-makers' display, both for design and engraving.

The cabinet-makers have some very good engraving on some of the things they exhibit. In the English department there is a cabinet

made by Jackson and Graham—a beautiful piece of work, both for inlaying and engraving. There is also a cabinet in the Italian department—a very fine piece of work. There are several others; but these I consider are the best in this branch of art.

The French engravers exhibit some very excellent engraving and designs for jewellery. E. S. Phillipe and E. C. Chabert have some very good engraving. M. Lesort has a nicely-engraved book. M. Armand, Class VII., has a very beautiful engraved paper-case, figures, &c.; as also M. Stern. These are the best out of a number of others who exhibit engraving.

The French engravers are very clever at ornamental work or figures, but they cannot engrave heraldic work nearly so well as the English. I consider the English engravers are quite as good workmen as the French, although they have not as good specimens in the Exhibition. I also found an engraving machine; there are one or two in the Exhibition, but I could only obtain information respecting one of them—that of M. Dulos. This kind of machine is only suitable for engraving on copper plates to print from, such as bankers' cheques, or for ornamental labels. I do not consider the work produced by the machine of M. Dulos is equal to that produced by a similar machine in the Patent Museum, Kensington.

There is a machine for the printing of silk handkerchiefs, by means of the pattern being engraved on copper rollers; but I could gain no information as to the manner of working it. I wish to call the attention of manufacturing silver-smiths to a new method of making silver cups or goblets by means of spinning, invented by M. Sollier, *Quai des Orfèvres*. I think they would find it well worthy of their attention.

I consider the exterior of the Exhibition alone would amply repay those who have travelled from distant countries to see it, although to an Englishman it may seem something in the style of a fair—the various minor exhibitors being spread about so much—yet, when we go through the separate buildings, we find there is something to be learned in almost every branch of business. In some the most powerful modes of destroying life by means of the latest improvements in implements of war; we go into another, and find the latest improvements for the saving of life by means of life-boats and medical machines. There are also picture-galleries; some of the finest engines, machinery; and light-houses, which show their various powers after dark.

To those whose studies lead after horticultural pursuits there is a place set apart for them, together with a small collection of animals. There is enough to satisfy the tastes of the most capricious mind. There are the various temples and restaurants, which I consider to be one of the most instructive parts of the Exhibition. You can walk from one nation to another, so far as the living, dialect, manners and customs are concerned. You may also study the various merchandise and costumes of the vendors at the different stalls. Besides the shellings of some of the most distant nations, the grand summer palace of the Viceroy of Egypt, the Mexican temple, Chinese tea-houses, a Turkish mosque, &c., there is also a restaurant in the Tunis depart-

ment, where you may listen to the native music. Several other restaurants have music, which breaks the monotony of the scene, and gives you an idea what some nations have of harmony. Those who have taken their coffee in the Tunis department will be able to appreciate the performance of a good English band, after what they hear there. Tents of the more uncivilised inhabitants of the earth are also to be found on the grounds—Arabs, and representatives of every nation.

I consider the French Exhibition to be one of the greatest educational events of the present age, and that it will tend more towards the enlightenment of the people than years of hard study.

Few nations would have ever undertaken so vast an enterprise, for the expense of such an Exhibition would frighten any other nation than France, which seems to spare no expense or trouble when it takes a thing in hand, to carry it out with such completeness as to make it a credit to the country and all those who have anything to do with it—a something to look back upon with satisfaction. I do not see any very marked improvement on our 1862 Exhibition, so far as engraving and inventions appertaining to that business are concerned; but then the time has been so short, we could expect but little. On the whole, I think the Paris Exhibition will go a great way towards the education of the French mechanic, especially as it has been open on the Sundays, and so enabled them to study it out of business hours. A more orderly people I never met with.

With regard to the education of the French art-workman, he has many advantages that the English has not, especially if his business be of an ornamental or artistic character, for the abundance of museums and works of art is so great that he cannot do else than learn. If he traverses a street, he will pass some ornamental work over the entrance of the houses: some are bad, but the majority are very good. Then, instead of having a plain space at the foot of a bridge, there is a nice statue; even the lamp-posts are works of art in comparison with those we are accustomed to see in the streets of London. These things, though ever so simple, must, when they meet the eye of a man, further his education in the art of design, giving him that zest for study rarely attained by English workmen. I hope, in the improvements now being made—the Thames embankment, &c.—the Government will take a lesson from the French, and give more encouragement to art-workmen, by adding sculpture, and so combining the ornamental with the useful.

I visited the *Ecole Imperiale de Dessin*, and inspected the works of the students; there were some very good drawings, and the same may be said of the modelling; but I do not consider this school any improvement on our Kensington School of Art. From what I can learn, Schools of Art were established in France some years prior to their establishment in England. Besides Schools of Art, there is an abundance of schools for general education, both for day and evening, as well as public libraries, where a man can go and consult the best of books free of charge. There are also museums to suit nearly every branch of study. I think if the English workman had these advantages he would very soon be equal to, or even surpass, the French workman in the ornamental branches of business. In my opinion, what has done more to educate the French

workman than almost any other thing, is having the museums open on the Sundays, and thereby enabling a man to go and see things he otherwise could not, being employed in the workshop during the week.

With regard to the apprenticeship of youths, those who can afford to pay to be taught a business do so; but for those who cannot, there is a *Société de St. Vincent de Paul*, conducted by clergymen. The directors of this society take upon themselves the task of apprenticing children when they have attained the required age. The children are then apprenticed without having to pay any premium; but they have to give a certain amount of time instead of money, arrangements being made for the apprentices to attend the schools (drawing or otherwise), during which time the members of the society look after them to see that they attend regularly. After the apprentice is out of his time, and should he be without employment, the society finds some for him. This society embraces all branches of business. At the age of twenty-one he has to take his chance in the conscription. If he has the bad luck to draw a low number, and should he be of any use for the army, he is either sent on active service or enters the reserve; in the first case, he must sacrifice seven years of his time; if he is in the reserve, he can continue his business as long as he is not wanted, but if wanted he must join the army and serve as long as they may think fit; but this depends on the state of the nation. I do not consider this any improvement on the English system.

I could not find any trade or benefit society connected with the engravers or silversmiths; there is a society connected with the artists, of which engravers, &c., can become members, should they wish to do so, the advantages enjoyed being pretty well the same as those of such societies in England.

I visited several of the large silversmiths' and other workshops, and found in them the same system as in those of England; namely, that of employing the engraver at his own home. A few of the silversmiths keep an engraver in their factories, where the wages range from 5 fr. to 12 fr. per day, more or less, in proportion to the ability of the workman; the hours being in summer from six in the morning to the same hour in the evening; in winter, from eight in the morning till dark, with one hour at twelve for the man to get his lunch.

I have to thank M. Froment-Meurice, M. Sollier, M. Hugo, and several others, for the ready manner in which they threw open their workshops and explained the different processes to us; but they were chiefly connected with the manufacture of plate and jewellery, with the exception of M. Hugo, who employs engravers in his workshops; most of the other manufacturers do not.

Through the recommendation of the Society of Arts, we went to the museums and workshops of the china manufactory at Sèvres, where we viewed the manufacture of some of the finest china for artistic beauty in the world. We were shown the models of articles manufactured at Sèvres from 1738, or thereabouts, besides specimens of china from almost every country in the world.

It must strike every one on visiting Paris the great encouragement given to the art-workman. The churches are most of them rich in works

of art—sculpture, painting, carving, and ornamental ironwork—some of the finest I have ever seen. These things show there has been no expense spared to make the churches, like the museums, both instructive as well as useful, and give employment to the artist and sculptor as well as to the builder.

I am very glad England has taken a step in the right direction, that is by having the Kensington Museum open after business hours, and thereby enabling a man to go and study in the evening. It is, I consider, one of the greatest benefits the English workman enjoys, and will do more to encourage him to persevere than anything else. If we have not in England the originals in antique statues, we have some of the finest copies.

From what I could see or learn, the French workman, after he has left his work at six in the evening, goes home to his dinner, and thereby escapes the system that many of our English workmen have of adjourning to the public-house with some of their fellow-workmen. Having dined at one o'clock, he is free from the necessity of going to his home when he leaves his work; whereas the French workman would lose his dinner or have to go to a restaurant, and, by so doing, have to pay for two dinners if he is a married man; therefore, I consider, the custom of dining at six o'clock is beneficial, both to the man and also to his family.

I visited many places of entertainment. In most cases the men appeared to have their wives with them; others go to a café or to one of the large billiard-rooms that are numerous in Paris, and spend their evening, in many cases their wives accompanying them. The favourite places of resort on the Sunday seem to be Versailles or the Jardin des Plantes, judging from the great number of visitors at these places.

I think it is a great benefit to the French people that the museums are open on the Sundays, and consider it is one of the chief things that has made the French workman what he is. If we could have the British Museum open in the evening and on the Sundays, it would give the British workman as great an opportunity for study as that enjoyed by the French.

I found great advantages in their mode of travelling by omnibus. A person can travel from one end of Paris to the other for three sous, which is less than half what we should be obliged to pay in London.

As a rule, I do not think the French mechanic studies his personal appearance very much, for he seems perfectly happy if he has a clean blue blouse on. I noticed also a great scarcity of drunken people. I do not think, as a rule they drink much spirits.

I think if some of the English tourists in Paris were to exercise more discretion, they would not act in the disgraceful manner they do by being about with opera-glasses and eating fruit in the churches during a time service is going on. One man came to me, and thought he had been very badly treated by the beadle of the church requesting him to leave the church or desist from eating nuts and throwing the shells about the floor. An Englishman knows how to behave himself in a church in England, and I cannot understand why he forgets that the same rule applies to behaviour in churches wherever they may be found.

I was much struck by the patience and orderly bearing of a French crowd, such as in entering a theatre. There is not that crush when the door is opened that we are accustomed to in England, it being the custom for those who get there first to take their stand near the door; those who come after have to range themselves about three or four abreast, and pass in according to the place they occupy in the crowd, and by so doing they avoid all the inconvenience of rushing for the best places, the crowd being kept in order by one of the police officials.

I visited a fair on the night of the grand display of fireworks, and was much struck with the behaviour of the people there. I thought whatever blackguardism or drunkenness there was in Paris, it would be just the place to see it to perfection; but I was most agreeably surprised to find a great scarcity of that pest which spoils a great many of our entertainments—I mean the roughs. Everybody seemed to have gone to the fair for his amusement. I only saw one drunken person there. It was rather amusing to an Englishman to see soldiers, about six feet high, with their long swords hanging by their sides, sitting astride the wooden horses on the roundabouts, evidently enjoying themselves, and I suppose practising riding.

The French do not seem so particular about gambling at these entertainments, for there is at all the stalls a kind of gambling apparatus, also numerous card-stalls.

In conclusion, I have to thank the Society of Arts for assisting me to see the Paris Exhibition; I have also to thank them for the catalogue of the Exhibition, and return thanks to the gentleman at the Workmen's Hall in Paris, M. Haussoullier, the secretary, for the great trouble he took to obtain permission for myself and a Mr. Elliott, to visit the various workshops of the jewellers and engravers. I have also to thank M. Fouché, the guide, for the pains and patience displayed by him in finding out various things for us. I found great use in a small book I had presented to me, the "Pocket Interpreter," one of which was given to each of the workmen at the Workman's Hall in the Exhibition.

DIE-SINKING, ESPECIALLY ADAPTED TO SILVERSMITHS AND OTHER METAL TRADES.

By WILLIAM ELLIOTT,

DIE-SINKER.

I WOULD in the first place remark that the French Exposition does not contain that amount of work, stamped or pressed in dies, that I had expected to find. In fact, I question whether any nation would take the specimens of stamped work exhibited by it as an epitome, or even a title of their capacity or skill in die-work, as applied to metal trades, and more especially so of England.

Although Messrs. Hunt and Roskell, Messrs. Hancock, and Messrs. Elkington exhibit splendid specimens of silver work, they do not exhibit stamped work, notwithstanding their—more particularly Messrs. Elkington's—facilities for doing so. They seem to have confined their attention to presentation plate, &c., the majority of such work bearing evidence of great skill in modelling and chasing.

The French silversmiths exhibit an immense quantity of good silver work, but very few specimens of stamped work; indeed, there is a lack of stamped work from nearly every nation, and I may say there is an almost total absence of stamped work from England; consequently, it will never do to estimate our ability by the meagre examples that the Exposition offers. It is to be regretted that houses possessing such claims to notice for general stamped work—as Messrs. Elkington, Messrs. Collis, Messrs. Winfield, and other well-known Birmingham firms; and Messrs. Dixon and Son, Messrs. H. Wilkinson and Co., Messrs. Martin and Hall, and other well-known Sheffield firms—have kept so aloof from the Exposition. In the Exhibition of 1851 most of the Birmingham and Sheffield firms exhibited numerous stamped works, and I recollect one firm—the Messrs. Creswick, of Sheffield—in addition to stamped work, also exhibited dies, illustrative of the various degrees and processes of stamped work, previous to the stamped pieces being handed over to the working silversmith to be made up into various articles of silver plate.

I will now proceed with my report. As to the quality and character of work by different nations; from so few examples it would be unfair to assume superiority by one nation over another. America appears to have the advantage as regards quality and character of stamped work

exhibited. I will append a few headings of notes made at the time of inspection.

Messrs. Tiffany and Co. (New York).—Very nice show of trays and tea-set work, and exhibitors of some good stamped work; in fact, the best stamped work in the Exhibition is by that firm.

Forster (Wurtemberg).—A quantity of stamped work; quality not good.

Franz Mosgau (Berlin).—Stamped, plated work; not good.

There is a little stamped brass work from Prussia, of a fair character, but very trifling.

Italy, Norway, Sweden, Spain, and several others.—Notes so similar that I need not repeat them.

Mappin, Webb, and Co. (London).—Very fair, but nothing particular.

Thiery (France).—Some good stamped chalice work.

Fanniére, Frères.—Some good stamped work on a tea-set, exhibited by them; style, Louis XVI.

France also exhibits some fair stamped copper and brass work, and also some buttons; but not of sufficient interest to specially note.

Sheffield and Birmingham exhibit so little, and make so poor a show, that the less said the better. I might fill this page with notes of indifferent work exhibited, but it would serve no useful purpose to insert them.

I obtained more knowledge of the actual position of French die-work from visiting the workshops of Paris than from any work in the Exposition, and was much surprised to find die-work so extensively used in the silver and other metal trades of France, and that they possessed both large and powerful stamps and presses, in conjunction with dies for general stamped work; but they have not, in some respects, attained the expedition or perfection that we have, a deal of their work being stamped in cast-iron dies, and the stamped plate afterwards surface-chased by chasers; and in their steel dies they go to much unnecessary expense in what are called box dies, for the purpose of stamping solid cast work. Box dies are much used in England for spoon and fork work, such dies being well adapted for the purpose. A deal of our work is stamped while the metal is hot, and this enables better work to be accomplished. The French, on the other hand, never appear to strike the metal hot in their dies, which is the principal reason that a deal of their work requires to be surface-chased after it is stamped. I was surprised to find such extensive use of not only die-sinking and stamping, but also of spinning-turning and engine-turning, as I observed in the French workshops.

I must now remark upon engraving and die-sinking machines in the Exposition. It appears to me that die-sinkers need have little fear of being superseded by these machines. In the first place, the work executed by them does not exhibit the sharp distinctiveness of good die-work; there is a sort of foggy, vague indistinctness about it. It is necessary, also, before the die is cut or engraved by the machine, that a convex model should be made, and then a cast-iron fac-simile of the model produced; the cast-iron model then requires to be cleaned of

dressed by a die-sinker or cast-work chaser. The cast-iron model is then placed in the machine; a point of the machine moves about the casting, indexing, as it were, a corresponding point or tool, which makes a concave incision in the "matrix d'acier," or other metal die. The machine is evidence of great skill, but commercially of small utility.

The price of ordinary steel-faced dies in France is about the same as dies are here—viz., 8d. per lb. Of course extra steel and box dies are more. Cast-iron dies in France appear to be about one-third more in price than they are here—viz., 27 or 28 francs per cwt. Cast-iron dies cost here about 12s. per cwt.

Wages of die-sinkers in France appear to differ as much as they do here, ranging from 6 francs to 20 francs per day; of course the latter sum is for a very superior class of work; but the general wages per day of 10 hours for good workmen is from 8 francs to 10 francs per day; ordinary or inferior workmen, 6 francs per day. Good workmen in England will obtain 50s. per week, and some few more than that; inferior workmen, 30s. per week; of course there is a very superior class of work that commands a higher rate of pay. Die-sinking does not admit of any division of labour.

Education in France, with reference to die-sinkers, calls for few remarks, only I believe an employer is bound to give an apprentice an hour or so per day for educational purposes. I did not observe that the students at the Schools of Art were in advance of our own, except in modelling, in which I must say they appear to excel.

There is no trades' union amongst die-sinkers, neither in France nor England; but I wish to say a word in reference to trades' unions, viz., that the system of the Conseil des Prud'hommes appears admirably adapted to settle trade disputes, offering to my mind the best solution of trade difficulties. Government and trades' unions would do well to consider the system as practised in France. Trades' unions might employ their funds with great advantage for benevolent purposes in connection with their own particular trade. By adopting the Conseil des Prud'hommes, they would prevent those fearful strikes and wasting of funds; indeed, by adopting the system of Prud'hommes, trades' unions would become as it were an assurance society for the benefit of each trade.

HABITS OF LIFE, AMUSEMENTS, &c.

There are many external influences affecting the habits of life of French workmen. There can be but little doubt that the everywhere prevailing politeness in all phases and ordinary walks of life, must have a beneficial effect upon the artisan, for the more cultivated or polite the man, the less likely is he to associate with the sot or the brute; consequently, these every-day examples of politeness must engender good. While the French workman has the opportunity of spending his leisure hours in so many pleasant places, where it is not considered derogatory to sit alongside of a blouse, or hold converse with the wearer, such things must tend to harmonise the social strata of society.

I think the Frenchman's practice of dining in the evening, after work is done, is most beneficial to himself and family, collecting and concentrating, as it were, the social ties of family to enjoy the principal

meal together, putting the man in better humour to spend the evening in a pleasant manner, or rendering him more fitted for leisure hour improvement.

Notwithstanding the pleasant opportunities, the social advantages, and the apparent happiness enjoyed by the Parisian workmen, there is an unpleasant reverse to the medal, viz., the often compulsory and unnecessary amount of Sunday labour carried on in Paris. It appears to me one of the strangest anomalies of Paris, after so many efforts of the proletarian class to better their condition, that such a state of things should continue.

I think few British workmen who have visited Paris will return home without feeling that their position in respect to the hours of labour is better than that of the Parisian workman; and also feeling that if more opportunities were afforded in this country for rational, and, I might say, national enjoyment, a visible improvement in manners and well-being would soon be evinced.

If some of the large and numerous squares with which the metropolis abounds, and the squares in large towns where regimental bands are quartered, were opened to the public daily, or on Saturday and Sunday afternoons throughout the year, and on summer evenings, say from 7 to 9 o'clock, and government were to order military bands to perform, it would in time have a most beneficial effect on the working population of this country. As it is, we have none of those public and gratuitous enjoyments which the French possess; but if some such plan were adopted, I have no hesitation in saying that it would tend both to refinement and social enjoyment; and necessarily, well-being and improvement would follow, gradually rubbing off some of the impolite rust with which the artisan is partially enveloped.

In conclusion, permit me to offer my thanks to the president and council of the Society of Arts for the opportunity and facility afforded me of visiting Paris and its workshops. Allow me also to record my sincere thanks to M. Haussoullier for his uniform kindness and courtesy on all occasions whilst I was in Paris.

WATCHMAKING.

By JOHN GREGORY AND JAMES STRINGER,

COVENTRY.

WE arrived in Paris on Sunday, September 8th, and engaged our lodgings in the buildings erected for British workmen, the arrangements of which are very good, and tend very much to the comfort of visitors. To all the officers in connection with them we wish to express our entire satisfaction, especially to Mr. Glazier, whom we found most obliging. Having obtained weekly tickets for the Exhibition, we presented ourselves to M. Haussoullier, the director of the British workmen's hall in the Exhibition building, and found him very desirous of rendering every assistance, and giving us all the information in his power.

By his advice we went to the French department for watches, in the Exhibition, in order to see what workshops would be best for us to look over in Paris. He then arranged for an interpreter to go with us. The next day we visited several of the shops, but though we found stocks of watches in them, the only articles that were manufactured there were small portable clocks; we were very well received and readily shown the different stages of manufacture; the manager for Messrs. Leroy and Sons showed us an improved escapement, a diagram of which he kindly gave us, but it is not applicable to watches. We then visited a main-spring maker's shop, and were shown the whole process of manufacture. The only place in Paris where we found watches in process of manufacture, was at M. Breguet's; the manager here is an Englishman, and he very kindly showed us through the establishment; we saw some very excellent work, as none but very first-class work is made here.

Though the number engaged in Horology in Paris is set down at 2,000, we find they are principally engaged in the clock trade. Education seems very general amongst them, as it is stated that out of 1998 workmen employed, 1970 can read and write, 7 can read only, leaving 21 who can do neither. The working hours are from 7 to 7 in the summer, and 8 to 8 in the winter, one hour being allowed for meals.

We again visited the Exhibition and inspected the watches sent by different countries. England still maintains her superiority in substantiality of workmanship and system for accurate time-keeping, as the leading principle in all other countries is the going barrel, without any compensation except the balance and pendulum spring; whereas the English have always the fusee. The French exhibit largely, and the

quality of the work is quite equal, if not superior to the best from Switzerland.

Finding Besançon was the seat of watch-making in France, we decided upon visiting that place, and stated our intentions to M. Haussoullier, who immediately made the necessary preparations for us, by writing letters of introduction and obtaining permission for us from the railway companies, to travel there and to Geneva for half-price. He also sent an interpreter with us, we paying his travelling expenses and board. When we arrived at Besançon, we went to M. Girod, vice-president of the Horological School; he was not at home, but we were to call next morning at eight o'clock. We then went to Messrs. Fernier et Frères. M. Fernier is president of the Board of Conciliation and Arbitration for settling disputes between masters and workmen and between workmen themselves. A similar board is in every manufacturing town in France, composed of masters and workmen in equal numbers. They showed us specimens of their work in different stages, which were very good. One of M. Fernier's sons accompanied us to see the process of gilding, which is very different to that practised in England; there is no lathe used, the surface is produced by acid, afterwards silvered and then gilt; the plates require brushing for a length of time after they are silvered, before they are gilt. M. Fernier then took us to some very lofty and commodious premises, occupied by M. Philibert, preparer of gold and silver for cases, probably the only one in France. In the process of melting the metal, charcoal is used instead of coke, as, in case of the melting-pot breaking and the metal running into the furnace, it is easier to collect it together again. The metal is melted in large quantities, and poured into iron moulds of various shapes. It is then passed through rollers, so arranged that when the metal leaves them, it is nearly in the shape required by the case-maker, and will require comparatively little turning. For this purpose there are sixty or eighty pairs of rollers; one set turns out silver in the shape required for the band of the case, another set turns it out the proper shape for bezils, even to the glass groove; a third turning out bands, with a pattern embossed on them, and so on. The case pendants are pressed out in dies, in two parts, then soldered together and turned in a lathe; the whole process not occupying more than a minute or two. Ornamental patterns and embossing are also produced on the pendants by the dies in which they are pressed out.

We next visited a gold case-maker's shop; he receives his metal ready prepared from the factory we have been describing, and has only to cut the different-shaped pieces into the proper lengths for bands, bezils, &c. bend them round, solder the ends together, and place them in dies to get them true and flat. He then fixes them in a lathe, worked by a bow, to finish them off; they require very little turning, as the metal has been already pressed into the right shape, by the rollers through which it has passed, in the preparing shop. The case bottoms are cut out the size required in a press, and then rubbed into shape in a wooden chuck, prepared for that purpose. The price for making the case at this place was, 11 frs., or 9s. 2d. each, all domes. All the metal used here is standard, the law not allowing any inferior metal to be used.

Next day we were accompanied by M. Girod, to whom we wish to

tender our most grateful thanks for his exceeding kindness towards us. He first took us to a gold and silver casemaker, where we saw the process as before, and ascertained the price of silver cases—open face, 3½ francs or 2s. 11d. to 4 francs, or 3s. 4d. each; hunters, 10d. extra; gold cases from 8 to 10 francs, or from 6s. 8d. to 8s. 4d. each; hunters, 1s. 8d. extra; all domes. We saw at this place some gold cases being made, which, when finished, would only weigh 6 grains each, or less than 4 pennyweights; they were about two size, English or standard measure. The lathes used are all hand-lathes.

We then visited M. Bichet's watch manufactory, and saw the polishing of watchwork, which is principally done by females, and very much subdivided, one woman polishing screws only, the next one blueing them over a spirit lamp, another polishing the small flat pieces of steel and the motion wheels, another the squares with a lathe and mill; others springing and polishing cases; in every instance the woman working at one thing only. By this means, of course, they do their work very quickly and well. All the workshops we visited were remarkably clean, and the general appearance of the workpeople was very respectable. We also visited a dial manufactory, where we were shown the whole process of dial-making and case-enamelling. M. Girod then took us to the museum, and showed us a collection of very ancient watches that he had presented to it.

Many of the workmen live in the country, and send their work by post or carrier. M. Girod advised us to go next day to Montbéliard, and gave us a letter of introduction to M. Gontard. We left Besançon at half-past six in the morning, and arrived at Montbéliard by half-past eight. We proceeded at once to M. Gontard's factory, which is situated on the mountain-side, commanding a delightful view. It is three stories high; the machinery in it is all worked by steam-power; it is a new factory, and only a small portion of it is at work at present. M. Gontard is a very ingenious man, and is filling it by degrees with very superior machinery, made under his own supervision, which, when completed, will turn out a very large quantity of work. The machinery at present at work is for making movements. He spent two hours and a-half with us, explaining his machinery. We met him again at two o'clock, and he took us to M. Lepec's, at Saint Suzanne, a short distance off. This was a very large establishment, where we saw the making of pinions and wheels, and putting the wheels on the pinions; this is done principally by females. In another shop we saw the pivoting and putting the work together. M. Lepec has another building on the other side of the road, where they make musical-boxes and small clocks, as well as watches, but we had not time to inspect this part of the establishment, it being time to meet the train. Wages are very low here. M. Gontard said he could have as many good workmen as he liked for 3 francs per day. Females are employed at from 1 franc to 1½ franc per day, 12 working hours to the day. The only account we could get about the rate of living here was, that a single man could get board, lodgings, and washing for 50 francs per month.

On our return to Besançon we went to M. Girod, to inform him how we had succeeded; he was very much pleased, and had written us a

route to take through France to Switzerland, and also five letters of introduction. He also gave us an account of the Horological School at Besançon; we had previously been over the building, but, unfortunately, the students were away for holidays, or we should have seen them at work. This school was founded in 1862, in order to facilitate and improve the professional education of workmen. M. Girod kindly gave us the following particulars of this school:—

**MUNICIPAL SCHOOL OF THEORETICAL AND PRACTICAL WATCH
MANUFACTURE AT BESANÇON.**

This school is founded to secure the professional education of young people who intend devoting themselves to the art of watchmaking. The city of Besançon is the principal seat of the manufacture of watches in France. The manufacturers of this city almost exclusively supply the French market, as, of 375,498 watches sold in France in 1863, Besançon supplied 296,012, or nearly four fifths of the whole number.

The school has for its object thoroughly to teach children the trade they intend to follow: to supply, in fact, the notorious deficiencies of an actual apprenticeship; and if the apprentices at the present time are so ignorant of the practical part of their trade, they are much more so of the theoretical part. The object this school is now carrying out on a large scale is to offer to young watchmakers an opportunity of constant comparison of the theory of watchmaking with the results at which they arrive practically.

The regular time for this practical and theoretical course is three years, but it is desirable that the students whose aptitude and conduct is reported favourably of should prolong their stay at the school in order to perfect themselves. The classes are held in a large building, belonging to the city, the situation of which is all that could be desired. The classes are under the management of a director, who carefully sees that each branch of study is diligently followed out. The teaching is divided in the following manner:—

First Year (third division).

PRACTICAL TEACHING.—Filing, turning, hardening and tempering metal, perfecting small tools for doing first halves, and finishing—doing first halves of the ordinary sizes.

THEORETICAL TEACHING.—Revision of early education, arithmetic, mensuration, geography, mechanical drawing, general principles, making the more simple tools and machines employed in watchmaking.

Second Year (second division).

PRACTICAL TEACHING.—Doing first halves of various sizes, pivoting and making the different parts of a cylinder escapement.

THEORETICAL TEACHING.—Studying style, geography, arithmetic, elementary geometry and its application, mechanical drawing, geometrical models, models of tools and machines used in watchmaking, designs of the different parts of a watch.

Third Year (first division).

PRACTICAL TEACHING.—Constructing and planting the escapement, examining, regulating.

THEORETICAL TEACHING.—Course of mechanics, ideas of industrial chemistry, cosmography, commercial book-keeping and general geography, mechanical drawing, study of various cut-wheels, models of escapements, and designing watch-movements for the model.

The theoretical lectures are given in each division every day, from 7 to 9 o'clock in the morning, Thursday excepted.

The work hours are from 9 o'clock in the morning till noon, and from half-past 1 till 5.

Drawing lessons are given in each division on Mondays, Tuesdays, and Fridays, from 5 till 7 o'clock in the evening.

The course of commercial book-keeping and general geography for the first division is held every Wednesday, from 5 to 7 in the evening.

On Saturday the director examines the pupils in the work of the week, so as to note step by step the progress made. In addition to the instruction given in the school, the pupils are taken from time to time to the different manufactories in the neighbourhood, so that they may become familiarised with the various combinations and applications of machinery, and also to different workshops where the several parts of a watch are made. The knowledge which they thus acquire of the methods used in the actual process of manufacture, and which can only be gained in the workshops themselves, completes the education indispensable to a thorough knowledge of watchmaking.

The school is visited each week by two members of the Board of Directors, composed of the most skilled men in the trade, who take note of the quality of the work done, as well as of the progress of the pupils. At the expiration of each scholastic year the pupils are subjected to a general examination, at the end of which prizes are awarded to the most deserving pupils. The distribution of these prizes takes place in public, under the direction of the mayor.

This distribution is preceded and followed by a public exhibition of the productions of the manual labour of the students, and the designs executed by them during the year. The vacation begins on the first of September, and continues during that month.

The conditions of admission into the school are as follows:—

The school for watchmaking receives any young people, without distinction as to country or nationality. To be received into the school, the pupils must be able to read and write fluently, and know the four rules of arithmetic. They are examined before a special jury before being admitted.

The admission of the new pupils takes place at the commencement of the course, that is, on the first of October of every year: but candidates can be admitted at any time of the year if they are pronounced by the jury of examination competent to follow the courses of the school. The demands for admission must be addressed to the mayor of Besançon, by the parents or tutors of the candidate, with the following certificates:—

1st. The day of the birth of the candidate, showing that he was 14 years old before the 1st of January of the year in the course of which he presents himself.

2nd. A certificate of good conduct, delivered to the father or tutor of the candidate by the mayor of the town where he resides.

3rd. An engagement, written by themselves, on stamped paper, certified by the mayor of the town, to pay quarterly, and in advance, to the pay-office of the principal receiver at Besançon, the school-fees, fixed at 200 fr. per annum, so that the first outlay of 40 fr. for furnishing tools should remain the property of the pupil. (The books, pens, paper, as well as the necessary objects for drawing, remain in the charge of the pupils.)

4th. A doctor's certificate, stating that the candidate has been vaccinated with success, or that he has had the small-pox, and that he has no tendency to hereditary disease.

We left Besançon for Maiche, when we left the railway and travelled two stages by omnibus, and found ourselves, at 11 o'clock at night, at a large, old-fashioned inn, where we stayed for the night. We had a letter of introduction to M. Morel, Mayor of Ecorcees, Doubs. He by chance came to the inn where we were stopping while we were having our breakfast; he had a little business to do, and then he accompanied us to a maker of cylinders, and there we saw the process throughout. He then had to leave us, but promised to meet us at Charquemont in the afternoon.

As we walked from Maiche to Charquemont, we overtook a man driving a team of horses and timber waggon. Our interpreter got into conversation with him, and found he was a maker of cylinders. He took us to his house and showed us his work in different stages. He makes them for from 2 to 3frs. per dozen. He said he had to work in the field for a living, and worked at cylinder-making when he could not work there, as the cylinder-making did not pay him so well. Charquemont is a very small place, but most of the inhabitants seemed to be employed making escapements, both horizontal and lever. We were joined here again by the mayor, and visited several workmen's houses; they were very anxious to show us all they could, and, in some cases, where the men were not at work, they sent for them, that we might see their machines at work. We were surprised to see how readily they handled the delicate horizontal wheels. We were now only about six or seven miles from the borders of Switzerland, and started for Chaux-de-fonds.

It being dusk when we reached the bottom of the mountain, we lodged at a wayside house for the night, and in the morning we proceeded up the mountain to Chaux-de-fonds. We arrived there by half-past nine o'clock, and visited two workshops. We inquired about the standard of gold and silver cases, and were told that if they were for the French market they must be made up to the French standard; but if for any other market they made them what standard they pleased. We visited the Horological School here. The pupils remain at the school for three or four years. They find their own small tools, and pay £1 per month for receiving instruction. This school has not the advantages or so good a system as the one at Besançon. They pivot the work and polish it the same as we do; but we were told the pupils are taught to do all by hand in the schools in the first instance, so that they may thoroughly understand each part of a watch.

We then went to see a woman polishing wheels—that was the only part she did. We saw no difference in the mode of polishing. The work is done in small parts, by people at their own homes. They generally live in two rooms, in a large house. There are no small houses for workmen, and even the manufacturers appear to have only parts of a house.

We next went to Geneva, and saw M. Pantex, who received us very kindly. He showed us readily anything he had in work or tools. His son had a tool, very nicely made, for sizing pivots. The pupils at the Horological School are taught to make them for their own use. M. Pantex, jun., took us to a main-spring maker's, when we saw the whole process except the hardening, as they only do this once or twice a fortnight, and they were not then ready for that process. They have a very simple and yet certain method of getting the springs of the same width from end to end.

There is a Horological School here also; M. Pantex, jun., went there with us; but it being the rule not to admit any one after twelve o'clock, we were refused; but M. Pantex went from one to another till he came to M. Dupontet, who wrote a letter that gained us admission. The pupils are admitted to this school at about fourteen years of age, and pay 5frs. per month, and find their own small tools. There are between forty and fifty working there now, but there is room for 121. There is a shop for each of five classes, and a competent teacher to each class. They have models on a large scale before them of what they are to make; they are taught to file everything up by the hand, even to the steel work to repeating watches. These schools seem to be considered by them indispensable to the thorough teaching of watchmaking.

Next morning we started on our way home, having been absent nearly three weeks.

To all those gentlemen who so kindly and generously threw open their establishments for our inspection, and to those who kindly accompanied us in the various places we visited, we beg to tender our grateful thanks; also to the Society of Arts for this opportunity afforded us of visiting the manufactories in other countries.

In concluding our report, we venture to offer the following observations with regard to the relative positions of the French, Swiss, and English trades:—The English watch is more durable and substantial, and less liable to get out of order than the French or Swiss watch, and is also, as a rule, a more correct time-keeper, owing to its having a fusee and lever escapement, instead of the going barrel and cylindrical escapement of the French and Swiss watches. But the French and Swiss watches are produced at a much less cost, and consequently in much greater numbers than the English. The advantages the French and Swiss workmen have, and which conduce to this result, are chiefly as follows:—The workmen are accustomed in their youth to receive instruction at horological schools, established for the purpose, by which means they have opportunities of obtaining a thorough knowledge of their trade, which the English workmen do not possess. They have also paid more attention to the introduction of machinery and tools for facilitating the production of the different parts of a watch, and the work

is more subdivided than in England. By these means they are enabled to produce at a much cheaper rate than the English can. They employ a much larger proportion of female labour than the English do, though this remark applies more to the polishing than to the finishing.

The Swiss manufacturers are allowed to make the cases to their watches of any quality of gold or silver that they please for all markets, except France, while the English manufacturer must keep to the English standard.

We have no doubt that the English workmen having the advantages of similar institutions as those existing in France and Switzerland, would tend very much to improve the trade of this country.

THE HOROLOGICAL DEPARTMENT.

By HERMANN F. JUNG,
WATCHMAKER.

THE collection of horological instruments shown in the Paris Exhibition has called forth numerous reports, written by men of science, eminently qualified for the task, both in English and French. Some of them are very good, and well worth reading. I shall therefore abstain from entering the long list of scientific competitors, believing that I shall best fulfil the duties imposed upon me by chiefly considering the social condition of the thousands of sedentary, toiling watchmakers of England, France, Switzerland, and Germany. The average earnings of the great majority are far below those of skilled artisans generally, although their work is of the minutest and most difficult kind. To become an efficient workman in his trade, the watchmaker has to serve a long apprenticeship, and devote almost the whole of his time to it for many years. The masters, in too many instances, teach their apprentices but some of the minor details of the trade, keeping them to those branches for which they show the greatest aptitude—simply because this is most profitable—and leave them to pick up a general knowledge as best they can. In most cases, after a young man has served his seven years, and paid a high premium into the bargain, he is compelled to serve another year or two as improver, at very low wages. I consider the present mode of apprenticeship, especially in England, a vicious one, and the law inefficient to protect the apprentice against an unscrupulous master. When at last every obstacle is surmounted, and a man has really become a good workman, his earnings rarely rise above £2 a week. The average wages of the great majority of watchmakers do not amount to more than £1 10s. a week. Some of the very best never get more, although a few favoured individuals may realise as much as £4. The men who make the most money are the little huckstering shopkeepers, who know little or nothing of watchmaking, but have just money enough to traffic in other people's labour.

The watchmakers keep aloof from anything akin to trades' unionism. They have no connection with other trades: in fact, they are quite ignorant of their doings, and, while they consider themselves superior to other artisans, they are socially far below them. Whatever may be said *pro* or *con*, it is an indisputable fact that the workmen belonging to a trade that is represented by a well-directed union receive higher wages than men of equal skill in trades that have no union.

In Switzerland an apprentice never remains seven years with the same master. He either learns but a small branch, and serves a corresponding length of time, or else he learns watchmaking thoroughly, generally beginning with the finisher,* under whose tuition he spends about two years; then he goes to learn the different sorts of escapements for two or three years, and ends with an examiner. By this method he acquires a general knowledge of the entire trade, and still can work at any particular branch, if he thinks fit, in preference to another; whereas in England, as has been already observed, the apprentice learns but one branch of the trade, or even only one of the many subdivisions of that branch, although he has to pay a premium sufficient for learning the whole.

In some parts of Switzerland, where the inferior kinds of watches are made, the workmen's wages amount to as many francs as the Englishman gets shillings in London; that is to say, in those parts of Switzerland wages are intrinsically 25 per cent. lower than in London, but the means of subsistence are 35 per cent. cheaper than in England, leaving a balance of 10 per cent. in favour of the Swiss. Where the superior watches are made, the remuneration of the workman stands in about the same relation to the pay of those who make the inferior ones as the London to the Coventry rate of payment. A comparison with Coventry, therefore, would show a larger balance in favour of the Swiss.

There is a remarkable difference between the English and the Swiss watchmakers respecting the facility of getting a living away from home. The English generally find some difficulty in the mode of working abroad, though in finishing and escapement-making they excel the workmen of any other country; while the Swiss can not only work everywhere without any inconvenience, but many get higher wages, even in London, than the home-taught workmen.

In Paris the wages have risen during the last twelve years. Formerly the standing-rate was 5fr., now watchmakers earn from 6fr. to 8fr. a day. In England, while the price of provisions has risen, and the wages in most other trades have advanced in a corresponding ratio, the wages of watchmakers have rather declined, or, at best, remained stationary.

In Germany wages are very low, and the price and mode of living is in accordance.

There was an increase of more than 200 exhibitors at Paris in the horological department as compared with the London Exhibition of 1862, and most of them made a larger display than in London. Although no decided novelties were exhibited, some improvement, and a steady progress, were perceptible.

The English watch and chronometer maker still stands at the head of his profession. In consequence of her great maritime commerce, England has afforded great facilities for the appreciation of the value of a correct time-keeper; and as her maritime greatness is to a great extent depending upon the proper performance of marine chronometers, she has given greater encouragement to that trade than any other country.

* The finisher is not he who finishes the watch, but the man who works in and finishes the train.

The aims of the English maker have chiefly been to supply a correct time-keeper; in these endeavours he has often neglected art and taste, and simply produced a scientific object. The Swiss maker, on the contrary, anxious to supply a marketable article—showy and tasty—has sadly neglected the scientific character of his productions. The one considered the watch as a useful, even an indispensable necessary, the other as an ornament, and both have treated it in accordance with their appreciation of its use. Great progress has been made by the English during the last twelve years in the decorative art, but they do not yet equal the Swiss. On the other hand, the Swiss have seen the necessity of paying more attention to the time-keeping part of their watches, so that the progress of both is converging. However, most of the engraving and ornamental part of the English watches is done by Swiss workmen. There are two or three English engravers, who for certain styles, such as heraldic engraving, far surpass anything done by the Swiss; still their work is overcrowded; they are too profuse in their figuring, their flowers and leaves are not natural, which shows conclusively that they have never learnt drawing *d'après nature*, but have acquired their taste by imitating the drawings of others. They seem to estimate the artistic merits of their work by the time spent over it, and the amount of labour crowded into a small compass.

The designing faculties may be said to be a gift of nature, but they require facilities for their development. The Swiss does not set out on his business career with a dead certainty that he will work for wages all the days of his life. He starts with the intention to become a watch-maker on his own account, either supplying wholesale exporters or customers, as the case may be, with the finished article, and he therefore does not neglect the higher branches of his craft. Besides receiving a comprehensive elementary education in his boyhood, drawing and designing schools are open to him, free of expense, during his apprenticeship, and he does not spend his Sundays in sullen monotony; works of science and art are accessible for his inspection on Sunday. When he gets weary and fatigued, he can raise his drooping spirits by a walk in the open air among the cheerful scenery that meets him at every step; and, according to the custom of the country, he may sit down in some public place of amusement and inhale the refreshing scent of nature's flowers, while imbibing a draught of heart-rejoicing wine, and listening to spirit-elevating music, which drowns all care, and raises the imagination to a conception of the beautiful. Under such training, and the influence of external circumstances, there is every chance for the cultivation of the designing faculties. Whether the Swiss will be able to retain their artistic superiority in future, remains to be seen.

The extent to which the division and subdivision of labour is being carried in more recent times, is calculated to exert a deadening influence upon the imaginative and designing faculties of the workman. A minute subdivision of labour dooms the great majority of the labouring people to spend the whole of their lifetime in simple mechanical operations and movements without any hope of relief. The man who knows that it will never fall to his lot to plan or make a whole watch, but—like a mill-horse—is doomed to move in the same monotonous circle year after year,

will hardly ever rise to the level of the imaginative designing artist. The business of his life is to make things of a certain size and shape; his main endeavours must be directed to mechanical precision: the slightest deviation renders his work useless; he is a passive link in the process of production; he has no voice, and can exercise no individual will in the arrangements which are necessary for the completion of the article of which he makes a part. He becomes a matter-of-fact man, who has a function to perform, and performs it conscientiously. He neither works for honour nor beauty; he is a drudge, whose "time is money;" £ s. d. are the sole motives of his exertions. Add to this, long hours of weary toil, a dull and depressing atmosphere, heavy stupefying beer, the solitary, gloomy, and exclusive observance of the Sabbath in this island, and you have the obvious causes tending to a depression rather than an elevation and cultivation of taste and designing faculties.

A lively controversy having arisen between some of the best London manufacturers concerning the awards of the prizes, I must state, in justice to Mr. Charles Frodsham, that, considering the difficult and responsible position in which he was placed, and being precluded from all competitive honours, I know no other man who could have filled the office with more discretion or in a more just and disinterested manner.

As for the particular merits of the different countries, England stands first in point of excellence for marine and pocket chronometers; they are superior to any exhibited in Paris; but with her cheaper watches she cannot compete with Switzerland or France. The error of compensation is one of the greatest difficulties to overcome. However well a watch may be made in every other respect, still it will vary considerably, if exposed to different temperatures, unless the error of compensation be properly corrected. Each watchmaker has his own system of rating and timing chronometers, but they have not yet arrived at perfection. The subject has been more profoundly studied by the English than by the continental makers, and some elaborate experiments have been made upon it, the result of which is that the English-made chronometers mark time more accurately in the varying climates than any other.

France stands second with marine chronometers and clocks. The only thing really new that I saw was at M. Breguet's own establishment, not in the Exhibition. Through the kindness of Mr. Brown, M. Breguet's manager, I was permitted to examine a clock containing a new apparatus, which, in the opinion of the inventor, Mr. Brown, will supersede all other clocks. He has ascertained that the ordinary tuning-fork is perfectly isochronous; that it will invariably take the same length of time for its prongs, when in motion, to accomplish a short as a long distance; that if the prongs of a fork be made to accomplish one hundred and twenty vibrations in a minute, it will always require one minute for them to vibrate one hundred and twenty times, whatever the force of the vibrations may be. The experiment has been tried upon a clock movement, with an ordinary lever-escape wheel. The tuning-fork, giving one hundred and twenty vibrations in a minute, is fixed to the clock frame, and resting on a slide. At the end of one of the prongs the pallets are securely fastened; to set it in motion, the first impulse must be given by a blow on the prong; the vibration imparted to the prong is at once

communicated to the next, and *vice versa*. Once in motion, the wheel is allowed to escape, and then it imparts the motion to the fork, through the pallets. The clock has gone for months without the slightest variation being perceptible. Some good watches were exhibited by this firm. For the keyless winding works the ratchet-shaped tooth has been adopted, which is said to be stronger and to work much easier than the ordinary tooth. Like other Paris manufacturers, M. Breguet imports most of his best movements from Switzerland, in an unfinished state.

Within the last few years, the watch trade has assumed considerable proportions at Besançon. The watches made there are principally made by Swiss workmen, and most of the movements are imported from Switzerland. There is no perceptible distinction between the Besançon and the Swiss watches: the manufacture was established by the Swiss to save the import duty which is levied on Swiss watches by the French government.

If Switzerland has to yield the palm to other countries for time-keeping qualities, she stands first for the variety of her productions. Switzerland supplies the watchmakers of almost every country in the world with keyless winding works, and no other country in the world produces striking-works. The tools, materials, and most of the complicated machinery required by watchmakers are principally furnished by Switzerland, so that, to a certain extent, the continuance of the watch-making trade depends upon Switzerland. The Germans, the original inventors of pocket-watches, have sunk below competing with other nations.

It appears, then, that the watchmakers of each country have as yet something to learn from those of other countries. Periodical exhibitions, in conjunction with the existing facilities of intercommunication, may some day bring all to a level.

STATE OF THE WATCH TRADE.

BY GEORGE COOK,

WATCHMAKER.

IF we are to be guided in any way by the Paris Exhibition, we shall find that Horology does not show any of those rapid strides of improvement which many other branches of science do. A hundred years ago we had astronomical clocks and watches, some showing fractions of seconds, and repeaters differing only from those of the present day, in style and workmanship.

The French and Swiss show a very large number of this class of goods, varying in price from £7 to £25, some very fine specimens, particularly repeaters, but bearing the usual foreign character.

The watches exhibited in the English department are, for the most part, of the very finest description, showing a decided improvement, and leaving the foreign manufacturers little chance of competing with us, either in style, fine workmanship, intrinsic value, or chronometrical perfection; price from £25 to £160.

The display of pocket chronometers, split centre seconds, chronographs, and others, indicating the fractions of seconds for scientific purposes, must give our first-class work the pre-eminence. It is in our second-class work we are losing ground; and we need not be surprised, when we compare our price and system of producing with that of the French and Swiss.

The following will give some idea of the difference of cost of the second-class work of the two countries:—

	FRENCH.	s.	d.
Movement finished	7	10
Dial			8
Escapement		4	2
Four jewels			10
Hands and glass			4½
Gilding			5
Case springing, polishing, &c.		7	6
Examining		4	2
Springing			5
Polishing steel-work			9
Putting together			10
		£1	7 11½

Keyless work from 18s. extra.

ENGLISH.		£	s.	d.
Movement	.		6	6
Dial	.		1	6
Escapement	.		8	0
Jewellery	.		3	0
Case	.		15	0
Hand and glass	.		2	6
Gilding	.		1	6
Finishing	.		14	0
Examining	.		6	0
Case springing, and polishing	.		2	6
Engraving	.		1	6
		£3	2	0

Keyless work, English, about £2 5s. extra.

The system of teaching in the School of Horology at Besançon is most creditable, and one of the principal advantages the French have over us. The schools are supported by the corporation, and under the superintendence of a master of science, and the best teachers are provided for each branch. The pupils pay £12 for three years tuition; if any are found deficient in their general school education, they are advanced in it, in addition to a thorough practical knowledge of their trade; and it is worthy of note that they begin at the beginning; and do, no doubt, in after-years, appreciate this benefit; especially if they are desirous of using such knowledge as a means of subsistence. The pupil is taught drawing and mathematics and their peculiar application to machinery; he is required also, in the first place, to make his own tools; here a great advantage presents itself; if he is ingenious, he will not confine himself to the ordinary run of tools, but make them to his own idea and particular purposes; hence, the superiority of foreign tools to our own, of many of which we have no conception; for instance, one tool, for drilling and polishing eighteen jewel holes at the same time, worked by a lad of fourteen years of age; another for cutting and polishing pinions, worked also by an apprentice. Can we wonder, then, at jewel-holes being produced at a cost of one franc for four?

These are not the only benefits derived from the school system; some of the most happy results are from the fact that the pupil is taught to make every part of the watch, the plates and locks, wheels and pinions, index and escapement. I was shown watches complete, made by a youth of sixteen years of age, with two years' schooling.

If such a system of teaching was adopted in England, when a youth is apprenticed, watch manufacturers would not have the difficulty they now have in getting a movement-maker to carry out any new idea.

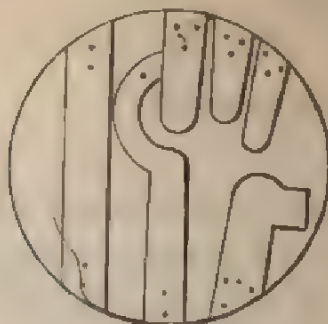
It is a lamentable fact, that out of some 22,000 workmen who compose the English watch trade, there could be found but few capable of doing, with twenty or thirty years' experience, what a French school boy can accomplish with two years' tuition.

There is yet another reason why they are in advance of us—in most

instances all parts of the movements are struck out, both brass and steel, the dial-plate, with screw and steady pin holes all dotted, barrel blocks, and covers; the cocks and bars are also punched out of hard brass, with screw and steady-pins marked.

Another method is to punch out a blank, Fig. 1, the size of dial-plate

FIG. 1.



and thickness of cocks; their shape is then traced on the plate, and then cut through with a fine piercing saw; even this saves a vast amount of labour, and helps to reduce the cost of material, and brings the finished movement to the low price of 7s. 6d., including pinions pivoted and index, and yet not materially reducing the wages of the work-people.

The chief watch manufacturing district in France is Besançon and its immediate neighbourhood; about 15,000 of its inhabitants are watch-makers; the case-makers number about 850, besides women who make a good living by polishing the cases. The engraving, chasing, engine-turning, and enamelling of the cases give employment to about four hundred workmen and artists. The system of working is much the same as in England; men working at home and sending their products to the manufacturers. Plain workmen earning from 2s. 6d. to 4s. 6d., and best workmen from 4s. 6d. to 6s. 8d. per day, piece-work.

Single men can live there for £2 per month, including lodging, washing, and three meals per day.

Some idea of the Besançon trade may be formed from the following:—Although only of twenty years' standing, the number of watches manufactured there, according to official returns in the last eighteen years amount to 3,221,555, of which 2,148,790 are silver, and 1,073,065 gold. It has required over 57 tons 3 cwt. of silver, value £322,318; and 15 tons 1 cwt. 13 lbs. of gold, value £354,430, for the casing of these watches: the number of pinions 19,331,100, screws 64,437,000, jewels 19,331,100, wheels 22,553,005; and if we go a little further, we find, to cut the number of wheels, one man, with one engine cutting one tooth every two seconds, with the usual ten hours per day, it would require something like 11,848 years; but if he should cut six wheels at once, it would then take him 1,974 years; and divide this by eighteen for the number

of years the trade has been established, it will give us 109, and this is probably the number of wheel-cutters it has kept constantly employed.

Large as may seem the amount of metal used for casing, it only represents one-third that of our own consumption; and yet the number of watches manufactured by us is far below theirs; thus showing their real value to be more than adequate to that of other countries.

The Swiss exhibit a large quantity of watches of all descriptions. In the surrounding districts of Besançon are manufactured the *Blanca-roulants* or clock-movements; 300,000 are exported to Paris every year, with vast quantities of watch materials, such as cylinders, levers, verges, &c., and most tools.

The Besançon watch trade produced in 1866 about £540,000; it will be seen, by the following table, that Besançon stands highest in comparison with the other towns of the French empire:—

TOWNS.	NUMBER OF WATCHES.		
	Gold	Silver	Total
Besançon . . .	101,309	204,126	305,435
Paris	40	5,282	5,322
Lyon	—	88	88
Bordeaux	—	4	4
General Total . . .			310,849

The next table will show the gradual increase of the trade in eighteen years:—

Years.	Gold.	Silver.	Total.
1849	6,149	32,449	38,598
1850	11,225	48,626	59,851
1851	14,735	53,091	67,826
1852	19,449	57,052	76,501
1853	29,742	65,155	94,897
1854	32,594	73,482	106,076
1855	49,184	92,159	141,943
1856	60,511	99,654	160,165
1857	69,325	108,230	177,555
1858	65,093	125,020	190,113
1859	66,731	125,145	191,876
1860	76,146	135,665	211,811
1861	83,678	166,726	250,404
1862	87,966	166,544	254,510
1863	103,536	188,508	297,094
1864	104,748	206,410	301,158
1865	95,594	200,448	296,042
1866	101,309	204,126	305,435
	1,073,065	2,148,790	3,221,855

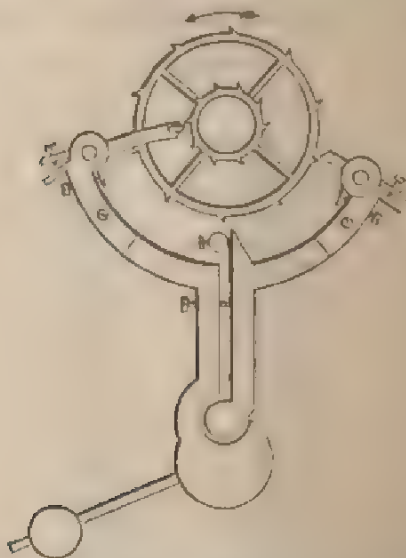
In clocks, the French surpass us in every point; the finest in the Exhibition are exhibited by them. Regulators and astronomical clocks, standing in 6ft. skeleton metal gilt cases, with 12in. dials, and mercurial pendulums of the very finest workmanship. One of these had upon the pendulum rod, in the place of the sliding nut for adjusting the tenths of seconds, a small cup; there may be a slight advantage in this, as in close timing it would not be required to stop the pendulum. The dead-beat escapement is invariably used.

In this department there was shown a beautifully constructed regulator clock, with extra arrangements for timing French clocks and time-pieces. The clock to be timed was fixed upon the back plate of the regulator, and its common pinion coupled up by a universal joint to the arbour of a wheel travelling at the same rate as the centre wheel of the regulator; the index and arbour of the time-piece were also brought in contact with a cam-wheel, the use of which is to move the index backwards or forwards, as the case might be. On the front plate of the regulator clock was a semicircle divided, a small hand travelling upon it indicating the number of degrees required to bring the clock to time.

A carriage clock of the same construction for self-regulating watches, was also shown in this department. Some very fine bracket clocks, metal skeleton cases, and exposed escapements, several on an improved principle.

The one shown in Fig. 2 approaches, as near as possible, the gravity

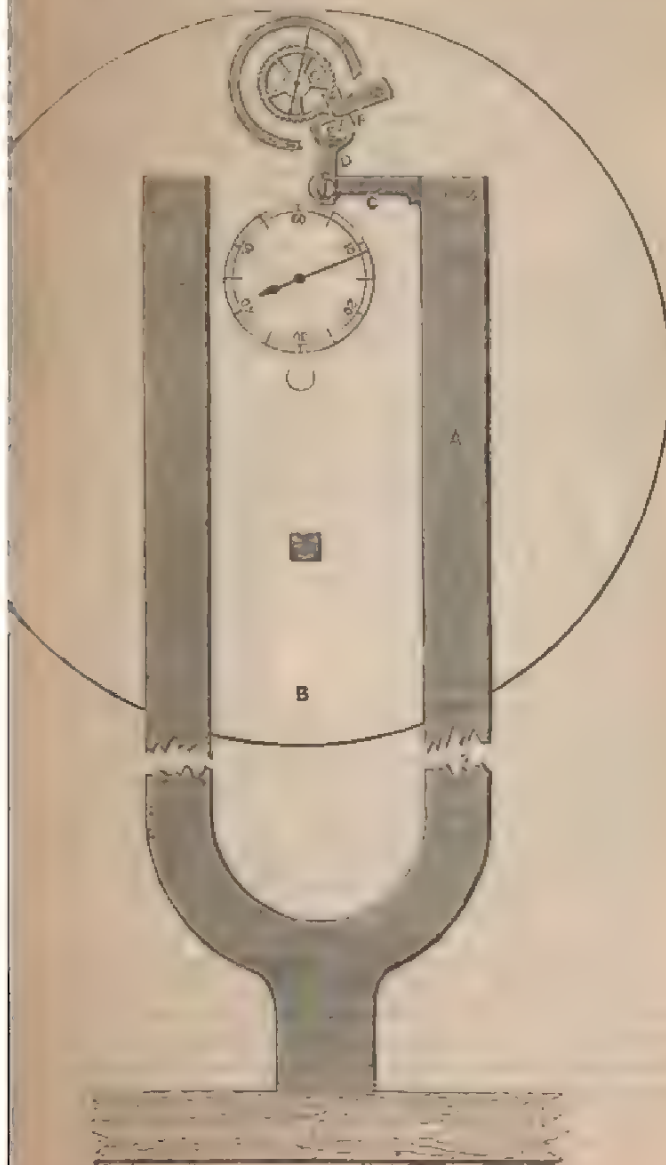
FIG. 2.



escapement, the pendulum vibrating between the two arms of the pallets at the back of the frames and lifts them alternately; their own weight in coming back to the locking position gives the impulse; the movable pallet on the right-hand arm is lifted by the tooth on the small wheel in

to the left-hand locking. The fourth wheel gives dead seconds, 2 in. pendulum.
The Mason clock (Fig. 3) exhibited by M. Breguet differs only from

FIG. 3.



ordinary clocks in the substituting a diapason as a regulator in the place of the pendulum or balance-spring. In the one exhibited, a marine chronometer movement (minus the escapement) is used. Although the isochronism of the vibration has never been doubted, we have not till recently been able to demonstrate the fact, but this can now be proved by a very simple method.

A represents the diapason, the foot of which is screwed firmly to the bottom of the clock-case; n, dial-plate of movement, which is also fixed to the case; c is a small arm screwed to one leg of the diapason; and in connection with the pallets D, which are pivoted at E; it will readily be seen that at each vibration of the diapason the scape-wheel F passes one tooth. The pinion of the scape-wheel is in depth with the wheel G. The pinion of this wheel carries a small hand, and shows the number of vibrations of the diapason in a given time upon the divided circle. The hand is on the fourth pinion, and indicates seconds. The minutes and hours are from the centre pinion, in the usual way.

In Paris there are two or three manufacturers of carriage-clocks, employing a good number of workmen upon the best work, such as have perpetual calendars, &c. The workpeople can earn from 5s. to 7s. 6d. per day.

The gilding of the metal clock-cases is carried on in Paris also. After coming from the casters they are sent to workmen, who file over all the figures and ornaments, to take off the mould lines, &c.; then they are scraped, and afterwards finished with emery-paper. They are next sent to the gilder, who prepares them for gilding—first, by plunging them in nitric, and then in sulphuric acid, and afterwards into a bath of diluted acids. If any portion of the figures is to be dead gilt, the bright parts are gilt first by the electro process. This part is then protected by varnishing, and the dead gilding is produced by the mercurial process. The varnish is then dissolved off; they are then washed, and dried in box sawdust.

In turret-clocks the French are second to none. They adopt universally the Rematow escapement and lantern pinions, and there is a squareness and finish about the frames and beds (however large they may be) which I never saw equalled in this country. Several of those exhibited had electrical arrangements for driving at a distance sympathetic clocks, and were also set by the current. Another had an atmospheric arrangement for sympathetic clocks, by a cylinder and piston fixed just above the fourth wheel-arbour, which raised a long arm by a snail in connection with the piston, forced the air in the cylinder through a small tube, which raised a lever in the motion work of the sympathetic clock, and pushed it one tooth forward every ten seconds, which represented the run of the big clock. Some of the largest of these clocks had very beautifully-arranged compensating pendulums.

There is one thing more to notice, and which deserves the greatest praise, and is the masterpiece of the Exhibition—the meteorograph, by P. Secchi. This piece of mechanism, for workmanship and ingenious compiling, is quite worthy of the gold medal.

TAILORS' WORK.

By R. SINCLAIR,

TAILOR.

AFTER my arrival at the Paris Exhibition I saw a great display of cloths, with but little tailoring from any country exhibiting, and, except the Austrian department, none worth mentioning; with a total want of military work, which is much to be regretted, as it is the most difficult part of our trade; and I should question whether the most skilled artisan of any business has to devote so much attention to his work as the military tailor. However, I will endeavour to give an account of my eleven weeks' stay in Paris, and how I found the Parisian tailor in comparison to the London one. This being the first time I have had to report anything, I find it very difficult, but I hope you will bear with me if it is not so concise and orderly as it should be.

English tailoring in the Exhibition was from two London houses, Smallpage's, of Maddox-street, and an army contractor's, with a few uniform tunics, wretchedly made, and in no way fit to cross the Channel. Smallpage's stall was chiefly decorated with the racing colours and caps of our aristocratic turfmen, with a few garments, anything but well made, for a West-end firm; with their novel coat, without sleeves, for deer-stalking or shooting, and vest, made of the same material, with the sleeves made up and sewn to the vest, also rows of pockets each side of vest, or rather divisions made in the pockets, sufficiently large to hold the shooting apparatus of the sportsman. This coat is made, as all their shooting coats are made, minus the sleeves, and must be convenient and suitable for what it is meant for. Morning coats they make the same; and this style of coat I have been informed has largely contributed to the fortune of that firm. However, it was the only novel garment I saw in the Exhibition.

FRENCH DEPARTMENT.

The tailoring was larger than in the English, without style or workmanship to recommend it, and cloth to match, supplied by slop and export houses; one house, La Belle Jardinière, said to be the largest export house in France, and employing over three hundred tailors, was the largest exhibitor. This work was on a par with houses such as Moses's and Hyam's, in England.

Both in France and England the slop-worker is in a wretched condition, who supplies this export work, and yet the profits accruing to

these houses are enormous. I should like the advocates of free labour, which means that the employer has a right to fix the price he will pay for his work, to answer this question—how, where such a state of things exists, the workman is always found very badly off, half-fed, and over-worked, whilst the unionist workman gets the best pay to be obtained for his labour? Man is not prone to give, and a workman may be sure that, to get an advance of wage, he must struggle for it by combination with his fellow tradesmen.

AMERICAN DEPARTMENT.

There were a few garments, badly-made army and navy clothing, chiefly made by machine; and I expect they were only sent to show the uniforms of the United States.

THE AUSTRIAN TAILORING

Sent to the Exhibition, was by far the best, and certainly was the best I ever saw (civilian work) for style, cut and workmanship, and taste displayed to give effect; it could not be surpassed by any firm in Europe. This work was sent by J. Rothberger, Vienna. One of the three-seamed overcoats was double-breasted and lap-seams, seams all edged with silk, felled behind, and stitched three-eighths, and silk down seams jetted about one-eighth, and beautifully done sleeve-heads, edged as well, velvet collar, jetted with edging along the collar ends, with a good bold front; it was a splendid made coat, and would, I should think, have taken any man a month to make. A dress-coat shown was quite as well made, with a fine breast to it, silk skirt, faced collar-ends rounded, lappels top and bottom, skirts rounded at bottom, likewise bottom of plaits and backs, with a fine English hole, narrow, and well-finished. The waistcoats were well-cut, rather straight, with a fish taken out of shoulder, running down to the breast: as waistcoats generally crease down the shoulder, I believe this will take away the loose cloth, which will be a great improvement, and at the same time give the necessary spring for the shoulder bone, which will do away with all stretching, and will also give the necessary spring to the gorge or neck; as most men, especially thin ones, are hollow between the neck and shoulder bone, it must be beneficial. All waistcoats exhibited by this firm were cut with a fish out, except thin fabrics. Trousers were well-made and cut; got up in the French style, shrunk all the way down the front, made tight to leg, hollowed side-seams cut purposely, and well-stretched out to appear straight; a peculiar flat side-seam, laid on one inch in width, edged both sides, being stitched up the width of a piping; in fact, all the garments exhibited by this firm were the best that possibly could be, displaying good taste, and style of the highest order, and the whole talk of the tailors of Paris. As the tailoring of the Exhibition closes with the Austrian, I examined the different countries' cloths sent to be exhibited, but none were equal to the British; I should say that a tailor could judge cloths quite as well as a draper. I thought it would not be out of place to give a list of those I considered the best makers. But the West of England, according to my judgment, far surpasses the whole exhibitors in fine cloths.

Strachan and Co., Lodgemore Mills, Stroud.—Splendid superfine cloths, mostly coloured; and Roberts' superfine, Stroud, were the best exhibited.

Isaac Carr's Mills, Tiverton, near Bath.—Splendid Witneys.

A. Laverton, Westbury Mills.—Beautiful dark tweeds and deer skins.

Marling and Co., Ebley Mills, near Stroud.

House, Mead, and Sons, St. Paul's-churchyard, London. Poole's firm of Savile-row, bought the whole of this firm's cloths exhibited; they are chiefly thick hunting cloths, superfine.

Randall and Way.—Good fancy cloths.

H. Geisler, Kirkburton, near Huddersfield.—The best Chebe cloaking ever seen.

Bliss and Son, Chipping Norton.—Firm and good tweeds.—Better than Platts' and Co.

Mahoney, Martin, Brothers, Cork.—Splendid Irish tweeds.

Kerr, Scott, and Son, London and Paisley.—Tartan shawls and plaids. The very best in the Exhibition.

Scotch tartans and plaids far surpass any made anywhere else; and this winter in Paris they are very fashionable.

Kerr, Scott, and Sons' goods exhibited were bought by the English Trading Company, 47 and 49, Rue Faubourg St. Honoré, called in Paris "Aux Montagnes d'Ecosse." This is a large firm, with great increase of business, but selling nothing but English and Scotch goods, and those of the best manufacture.

French, Austrian, Russian, Belgian, Dutch, and other countries' cloths were much about equal with each other, but far below the English first-class goods. The French manufacturers, however, produce some well-mixed or spangled cloths, some as much dotted as a snow-cloud, of different colours, according to the ground of the cloth, and for cheap cloths they look rich in comparison to the cheap Yorkshire cloths, which most working people wear, and would not get rusty or change colour, as our common blacks and greens do. I believe if our manufacturers were to turn their attention to this they would do an increase of business far beyond their expectation. Fancy cloths coloured are not sufficiently worn; they look better, and wear better. Large master-tailors of the West-end have for years tried to foster the taste for coloured clothing; to a certain extent they have succeeded; but yet the customer hangs on to his black cloth as yet. The females dress more tastily in their different coloured garments, making them look, of a summer's day, in the distance, like so many coloured butterflies, which has a very pretty effect.

FRENCH TAILORS IN PARIS

Are more than outnumbered by foreign workmen, including Germans, who are very numerous; Alsatians, whom the French workmen class as foreigners; Italians, a few Spanish, Belgians, called "Flamands" in Paris; Dutch, Swiss, with a goodly sprinkling of Russians, Swedes, Danes, and Norwegians. But the French workman in Paris is a better workman than the larger bulk of this stock of foreigners, most being young, and come into France for two objects—to learn the language and improve themselves in workmanship. To learn the language the

young workman takes lessons for two or three months. These lessons consist mostly in writing exercises, which they soon become tired of; learning by rule—seldom or ever having learnt their mother tongue by grammar, and also a want of time, they abandon the professors, and learn it from their fellow-workmen, and then it takes the majority two or even three years to be able to rattle along freely and quickly. But a foreign workman, passably good and young, in Paris, would in a twelvemonth learn the French style of working, and as regards sewing would be equal to the native. Judgment in tailoring takes a man, to be competent, as a rule, close upon 30 years of age. The Swiss, Alsatians, and Dutch speak French, or *patois*, as the French say, and therefore have no difficulty in being understood. Their style of working is also similar, but being young men, and coming from small towns, they want great improvement, except the Flamands or Belgians whose quality of work is as good as the French, and generally speaking is much quicker, and he is reckoned the best tailor. The Italians soon speak French, and their work at home is made similar, and in a short time they are as good tailors as the French. I did not come across any Spanish, but my friend Mr. Gilbert informed me that generally speaking they are equal to the natives, and learn French easily. The Germans, as a body, are the most inferior workmen going to Paris, but generally turn out good tailors before leaving, and manage to learn the language well. There seems no obstacle but they will surmount it. They travel over all Europe, and are to be found in every village and town in France. Their inveterate love for travelling and indomitable pluck make them the greatest travellers in the world. There are hundreds of German tailors in Paris that have been all over Europe; and the British Isles they know almost every corner of, and when they accomplish a good smattering of the English language, they are off to America. Germany does not benefit much by their advancement. When leaving home first, like the youth of all countries, they mean, after seeing the world, to go back, get married, and settle. After three or four years that idea gets exploded, and America swallows them up at last. Europe matures them as workmen, and the New World reaps the benefit, which she has a perfect right to. A workman in America is a gentleman compared to his up-hill position in Europe; and I do hope that the tailors' emigration scheme, established in London this summer, will extend all over England and the Continent. A tailor in England especially, is always in difficulties on account of the fluctuating nature of the trade, without a chance of getting work at any other line of business. The whole of the *brasseries* of Paris are used by Germans, and lots of them you can find talking good English; and some of them speak five or six languages as fluently as their own. They are to be admired for their perseverance and industry, and are a fine-looking body of men. Far different looking from the German you find the tailor at the east-end of London, existing upon slop-work, carrying want and over-work in his face, as a kind of livery for a wage to be known by.

The Russians, Poles, Hungarians, Swedes, Danes, and other north of Europe tailors, generally mix up and associate with the Germans. But lots of Hungarians and Poles have the privilege of sending their children

to schools in Paris free, established, so I have been given to understand, by Napoleon the First, but what for I don't exactly know ; but several of my acquaintance send their children, and that is the chief reason of their stopping in Paris ; it is a great boon.

English tailors in Paris are very few compared to the swarms of other foreigners. During the French strike there were but six of them, and one was an Irishman, who went in against the men, which made the other five look and feel awkward, the French believing that John Bull would not have done such a thing. And when quietness reigns in London and Paris, there are seldom more than 20 or 30 at the outside in Paris. But this summer, and at the present time, there are fully 100 in Paris ; 20 are already preparing for the United States early in January. The strike in London has so disgusted them against the masters, that the men would rather leave the country, and meet far worse treatment, than go back. The English tailor becomes impatient at the trouble of learning continental languages ; so, as soon as he leaves England, he is off where his own language is spoken, either to the British colonies, or chiefly to the United States, but such is to be regretted. Young English tailors should all go to Paris for a season or two, to pick up the language and style of working. The French system of getting up their trade is difficult to an English tailor at first ; but if he has previously worked at the West-end of London, and been considered good, he will soon be a better tailor than the Frenchman. He will be a great deal quicker and better able to make up fine cloth coats, especially the edges, as a French workman is always trained to make the edges heavy, and fronts are also clumsy.

The French style of work differs from the English, which makes it difficult at first for him to do, chiefly in the way they start their garment. A coat they would start up all v's, which often are six or seven, sew the sidebody, and then get an iron and press the stoats and press back the breast, then sew the lappels on and across waist, and then when you press your lappels you can work up your breast again with the iron, and then baste a strip of canvas down to pad your lappel ; let the canvas be straight, and then you baste another canvas in on the facing ; press well and fasten your two canvasses together, very thickly, then press again, and, after that, sew your lappel facing on, and put the breast pocket in through the canvas, and sew it round to the canvas, and when you have basted over nicely, there must not be a bit of loose facing that can be felt by the hand.

An English tailor finds it awkward at first, because it is not so ready as his plan, but soon learns. The waistcoats are a little different, and so are trousers ; but a man would soon get accustomed to it, though it is more trouble. Coats in Paris are all basted or got ready to try on the customer, and always so basted that, supposing an alteration is required, the coat would be on a straightforward way of being finished. But whether required or not, the workman finds that the coat has to be altered, and getting this coat to try on has taken him one day or one and a half-day, which he is paid nothing for. A coat will often be six times got ready to try on and no pay for it, and it will often be the fact that the workman loses two days a week, which the men acutely feel ; and this was one of the

chief causes of the tailors' strike in Paris, to do away with basting; and when it is considered that the tailors of Paris live up at Montmartre, on account of the rents in Paris being too much to pay, it's a great shame. There he has got to trudge into Paris to get his work tried on, often in the middle of the day, losing his time, which should be very valuable to a workman. But what cares the capitalist, who often is no tailor by trade—as long as he gets the man's time for nothing? And then after so basting and losing his time for two or three days, the journeyman gets the garments to be finished quickly, which necessitates long hours and night-work, and what is the result?—a free use, too often, of stimulants to produce a false courage, with feelings irritated against the employer for his injustice. But what cares the employer; he gets his trying on for nothing, and begins to get fat by what he feeds on, and soon begins to think that he is paying too much for the making, lops off, perhaps 2frs., and some of them, if a slight twinge of conscience comes across them, call them cheap jobs, as the customer won't pay much for it, which is invariably false. As you gradually find that every job after that is being lowered—the men put up with it as long as possible—and then they find they cannot get sufficient to pay their way. This was the case with Paris tailors, and prices of garments were getting so reduced that they could not possibly live, and, without the men being previously organised, they all struck against this state of things, without funds or any apparent means to live. Subscriptions came pouring in, however, and officers were elected by the men, who met at Montmartre. Tickets of thirty sous daily to the single men, and about sixty to the married, were given, and the men were so determined to keep out and gain the strike, that several firms in the meantime were giving way to the number of sixty, and the men being allowed and told by the Government that they could still hold their meetings, were all at once told that they would not be any longer allowed to hold meetings, that the strike must finish. The men's committee was summoned to appear before the law courts, fined heavily, and finally the strike was lost through this interference of Government. However, there was, on the price of making, 10 per cent. gained; but this robbing a man's time for basting still continues, and is still the bone of contention. It is difficult to ascertain a French tailor's wages with any degree of certainty. They all, as a rule, have to make a workshop of their own home, and the man that takes out the work from the shop generally employs what is called a *petit bœuf*, a young man who generally is not competent to work for a shop himself, and the tailor and his *petit bœuf*, during the busy season, will average 100frs. a week, 60 for the tailor who takes the work out, and 40 for the *bœuf*. But when the season is over, these earnings will be greatly reduced, as low as 40 or 60frs. for the two men's wages. But Paris is far better than London in this respect. During the slackness of trade in London there will be hundreds literally doing nothing, as well as shops filled with men, supposed to be there whether there is work or not, earning as little as 6s. or 10s. a week. Paris, in this respect, is far before London; there is no such extreme poverty found amongst the Paris tailors as there is with his brothers in London. I was working myself in a West-end house last winter, and there were several coat-makers there that were not earning 15s. a week. Prices

paid in Paris for frock and dress coats are better than in London. Dress and frocks in Paris range from 26frs. up to 40frs., according to the work required by the master. A man, generally speaking, could make two 26fr. coats as easily as one coat at 40frs.; but the average price of frock and dress coats, both for English and French houses in Paris, is from 30frs. to 34frs., making in English money—

For 26frs.	£1 0 10
„ 30frs.	1 4 0
„ 34frs.	1 7 2
„ 40frs.	1 12 0

whereas in London, for the same class of work, a man would be paid for a coat—

Paris prices.	London prices.
26 francs (£1 Os. 10d.) . . .	£0 17 1
30 „ (£1 4s.) . . .	0 18 3
34 „ (£1 7s. 2d.) . . .	1 3 0
40 „ (£1 12s.) . . .	1 8 0

This gives the Paris tailor an advance over the London tailor for—

26frs.	0 3 8
30frs.	0 6—3
34frs.	0 4 2
40frs.	0 4 0

Vests in Paris start from 6frs. to 9frs.; not very different to London. Trousers start about 7frs. to 10frs.; a little better than in London. Single-breasted three-scamers start from 17frs. to 20frs., very lightly made; rather better than in London. Morning coats, single-breasted, 20frs.; double-breasted, 24frs. No extras. About two shillings more on each job than London. Inverness capes start at 16frs. (12s. 10d.). London 12s.

The work is better paid in Paris than London, and I shall advise more English tailors to go over. The French masters treat you with more respect. Like the English master, he roars and finds fault with your work, but you are allowed to pay him back in that respect, and he does not complain. But to answer back a West-end foreman or master, whilst he is gratuitously dealing out insulting language to you—just answer them, and you are immediately discharged—a pretty state of things, in the 19th century, between employer and employed.

I stated that tailors worked at home, as a rule; but every shop in Paris likewise has men working on the premises—sometimes one or more, up to seven, according to the size of the trade. These men are called pompy men, or men working on the pompe; for often, after so much trying garments on, they are, after being sent home, found not to fit, and sent back to be altered. We have no men kept specially for alterations in London, and I believe it is a good plan: so concurred every one I asked an opinion of, one remarking that if their time was lost while making the garment, it stopped there. I wish it was so in London. It is a French tailor's ambition to get to work on the pompe.

They are paid from 14 to 15 sous an hour, and, being regular, and far more comfortable than the harassing work of making, average 45, 48, or 50 francs a week all the year round. He suffers no slackness, whilst the piece-worker will not be earning sometimes more than 25 francs a week. It must be easily seen that a man once getting to work on the pompe would try to retain it. They alter new work, repair and alter old, and, in fact, do anything that wants doing—bar making garments. I forgot to mention that the pompy men work on Sundays, till three o'clock one Sunday, and five o'clock the following; so they are pretty tightly kept to it, as regards long hours. But all French tailors, working for French firms, work Sunday morning, and generally get paid on Sunday at noon. English firms close on Sundays; the French tailors, when once used to it, like the change. The habits and life of tailors in Paris (so far as I could observe) and living, were far more temperate than in London, which is to be accounted for because they can earn the necessities of life easier than in England, with a more constant supply of work, and better treatment from the employer, which has the greatest influence of all on the morals of a workman. They go to their food from about eleven o'clock to twelve in the morning, eat comfortably (quite the reverse in a London shop), partake of plenty of food, with their pint of wine and a good taste of fruit, finishing with a cup of coffee and a cigar; he has two such meals a day. The West-end of London tailor's dinner generally consists of a half-pound of steak, often hard and badly cooked, a half-pennyworth of bread, two potatoes for a penny, a pennyworth of greens—a thimbleful, and a dirty pint of porter. He has scarcely time to eat this in the workshop, and in most cases this is the only meal a London tailor gets for the day with meat. The drinks in Paris are not made so villainously strong as to make a man drunk. I think they drink, on an average, more than an English tailor; but there is no strychnine in the drink to make the nerves twitch, or disorder the head. Everything in the eating and drinking is better, which makes a wonderful difference even in a man's career. Their amusements are manifold, in comparison with London tailors. They can go in the evening and play at chess, draughts, cards, and several other games; but seldom or ever gamble. There are lots of balls free; some to be entered for a few sous. They can go to the theatre for nothing, if short of money, and also earn a few sous, by going to see the claque-master; you are placed in the best part of the house, but are supposed to clap your hands, and shout for the success of the piece. Shooting-galleries, and other places of amusement, are always open to a Parisian workman; yet in London a workman has very few places to go to of an evening, on account of the charge being too high. Every country has its own standard of morals, and yet most people in England would think this state of things bad; but yet you do not see a third of the immorality there as in London. Their greatest day of pleasure is Sunday; and I was told that the foreigners soon get used to it, and enjoy this pleasant life as well as the Parisians.

As regards female tailors, they are very numerous, and generally work in shops themselves, or else work with the husband. They are not compelled to be hired out as sweaters do in London, where prostitution is sometime

one of the conditions of being allowed to labour. The French female worker does not look care-worn as her English sister, and is never seen drunk or in rags. They generally make small jobs. As regards the cost of material, I could not, to satisfy me, gain any accurate information. French cloth, taking into consideration that their metre or yard is more than ours by some three inches, was about the same price, I think; cost of materials is about the same; but the English Trading Company told me that their cloths were dearer, on account of coming from England, a duty being on them. I asked, how much was the duty, but they evaded the question; and since I have heard there is no duty, which I cannot say, as yet, either way.

In conclusion, I should like to show the difference in the London foreman and the Paris foreman, and the influence they both have in the establishment they are employed in, and how it is used for bad or good. The French foreman is generally, like the London one, selected from the shop-board, and engaged at a salary of from 2,000 to 6,000 francs a year; this price represents about the lowest and highest pay. The Parisian foreman has no control over the men to any extent, as most of the masters deal personally with the giving out and receiving back of their work; they certainly would have great influence in obtaining a friend work, which is natural enough, but the master would have, in a French house, the passing of the garment when finished, and consequently would soon find whether the man so employed was a good workman or not. A French foreman has most of the trying-on to do with the customers, and takes all the abuse of the master if not fitting. (It is a fact, that all connected with the tailoring trade are bad-tempered, that is to say, they become nervously irritable.) The man comes and fetches the job from the shop, and receives it from the master, who gives him his instructions, or if particularly wanted, the foreman would take it to him. The foreman does not take the lead in cutting, perhaps seldom cuts; and if he does, very often with the master's patterns. He is more in the position of a trimmer in a London firm, than what an English workman would understand as a foreman. There being no shop to the premises where new work is made, the foreman cannot go in and deal out in invectives what the master has just given him. Such is about the position of a foreman in Paris, which I should like to see a little more comfortable for him; yet it is a great injury to our trade to give them too much power.

London foremen, on the contrary, with very few exceptions, and that only in small firms, command the establishment they are employed in, so far as regards the men, the masters seldom speaking or having anything to do with the men. If they want to convey anything to a particular man or men, the foreman is the medium. In the large firms, where several foremen are employed, each foreman selects his men, so you soon know which foreman you are supposed to be under. Coat, waistcoat, and livery foremen select their men; and if your foreman has nothing to cut, and he knows that you get a job from another, it often amounts to being discharged, or the mildest form of treatment would be hawbaggling you about the next week at a reduction of a wage of even 15s. or a £1, and that because you were trying to take home to your wife and little ones as much as possible; in fact, to pay your way and hold your

head up above water. Many a score of tailors suffer from this cause. Again, if you disappoint with a garment, that is, you are often given a job to make in very little time; you tell the foreman you cannot, the time for it is too short; he tells you to get help; you try and cannot; acquaint him of the fact that there is no help to be got; he generally blusters back at you, and tells you he must have it: you sit down, don't stop for food nor anything else, and work like a poor nervous automaton; what's the result? job is half-hour or one hour behind; you take it in, you are told to keep it, that the customer is gone; and the foreman coolly tells you that you can put your boots on for a fortnight. That means, if you are a man he does not want to discharge, you can go away and be out of work, for what he cares, and come back to him, of course, very penitent. But the worst of this affair has got to be told; one of the men going in with work finished, perhaps two or three hours afterwards, sees this job being packed up to be sent away, and likely the porter having then an hour to take the job in.

This, and as bad, is the treatment men receive; and yet masters tell the public how kind they were to their men. Again, there are several foremen, some even getting as much as £10 a week, who receive £5 and £10 in money from young tailors to learn them to cut; but as never for that purpose; they never receive a lesson in cutting; it is to keep them in work, to the injury of the good tailor; and no one knows the evil of this practice except those that see its working. Both the man that gives and the one that receives, should be placed outside the pale of civilised society. They are kept with plenty of work, and men that have been in the shop for years, and considered the best workmen kept idle, and often with heavy families. Yet these foremen rise from the ranks; and this is not a quarter of the evils we as journeymen suffer on account of too much power being vested in them. You seldom find but what power, more or less, spoils a man; but the West-end foreman has no medium. Lots more of them have got some fellows working in a garret, paying them £1 a week—sometimes more, sometimes less, for giving him work. Others, again, to the detriment of the trade, keep regular sweating establishments, worked between him and another who fetches the work. The master, in cases of this kind, has no knowledge of what is going on. These are a few of the evils we suffer under; and as the basting system is now general, the different foremen can keep situations, to the detriment of the men. And as very likely his pay ranges from £1 to £6 a week, he has some interest at stake; jobs time after time are basted, and then when finished often come to pieces, or have 12 or 14 hours' alteration. Saturday evening you put down your log, expecting your wages, you find about a week's rent deducted. You go to the clerk, and ask how it is; he tells you he was ordered to take off the amount—the foreman told him. You go to the foreman: he blares out, and very likely tells that you are worse than a robber; and when he was sewing, he tells what a lot of work he could do, and he shall not pay any more; if you don't like it, you must leave. It has always struck me as a sad feature, that these foremen were such splendid journeymen. That is one of the evils in not having a time-log; and I am afraid we shall a

have to struggle before we get that. I am sorry that the sewing-machine is not more used than what it is for the ordered work. It would reduce the number of tailors, which must be to the advantage of the journeymen, and also would reduce the arrogance of the employers. Tailoring should not be a trade, yet I believe men must always be in it. The machine is practically no reducer of the labour market, which its greatest good would consist in (I am now speaking of ordered tailoring trade). Fully half what the machine does is creating its own work in the tailoring; for, if there was no machine, inside creasing and quilting would not be done, and lots of jobs you have got to fully baste thickly, and press it with an iron before it is fit for the machine. The report of a machine used by Government is very incorrect. Although it is only common soldiers' work, it states that a machine made a pair of soldier's trousers in 45 minutes; but it does not say who prepared the work for the machine, which certainly would take all that time, and gives the time for making by hand, 4 hours 42 minutes. A Government machinist told me once that a machine they had got stitched 78 overcoat seams in an hour. That is about the fastest I have heard of. All the seams of a soldier's coat done in less than a minute, or 78 to the hour! That beats what a Yankee told me in the Exhibition—that his machine would baste a coat together, and make it all by itself, in two minutes less than three hours.

My conviction is that the West-end tailor of London is by far the best and greatly the quickest workman, and by far the worst treated. The peculiarity of the French working he would soon learn, and do as well; but it would never do for England, where men work three together in shops, instead of one at home, the same as in Paris.

BOOKBINDING.

By LOUIS GENTIL.

BOOKBINDER.

Before entering upon the task of reporting on this subject, I must acknowledge, with regret, that the especial object of my visit to Paris remains unaccomplished. The two principal things tending to this result were:—

First. With regard to the binding exhibited. As the cases in which the books were exhibited were all closed, and no person in attendance to open them, it was impossible to form a good idea of what were the real merits of the binding of the different specimens exhibited. I could only judge from what I saw of the outside work, and therefore do not feel myself qualified to give a fair and unbiased opinion.

Secondly. With regard to the way in which the various workshops are conducted. On this subject, also, I was unable to obtain the information I sought; partly from the short duration of my visit, but principally from my inability to obtain access to any workshops where my particular branch of the trade (extra-binding) is carried on.

The general display of bookbinding in the building in the Champ de Mars was small as regards the number of firms represented. I much regret that others of our well-known binders, French and English, did not exhibit. In the English department the only direct exhibitors of extra work were Messrs. Ward and Co. (Belfast); Zachsendorf (London); Ramage (London); and Hammond (London). The works exhibited by these firms form as fine a collection of binding as the 19th century has produced; and it is therefore no matter of surprise that the majority of medals for binding were awarded to the English.

The French binders also display some very excellent work, but they are, like the English, represented by only a few exhibitors. Their style is certainly most beautiful in design, but decidedly deficient in execution.

Alfred Mame exhibits a large and costly display, as far as outside inspection goes: but I cannot think that the gold medal awarded to him could have been for superiority in bookbinding, for his work, although very excellent in taste and design, requires a deal more precision in the working to merit so great an honour.

Madame Gruel Engelmann also displays a very costly and elaborate collection, the binding of which is superior to the former; but, apart from

the mountings with jewels, ivory, gold, and silver, there is still room for improvement in the execution of the finishing, which requires more firmness and precision.

In the French jewellery department I met with a rare specimen of bindings, by R. Petit, entitled, "The Life of Cæsar," which I had the pleasure of handling, and thus was enabled to judge of the real merit of the workmanship. It is finished in a Roman and Corinthian style, enriched with precious stones and jewellery. It is a beautiful and well-executed piece of work, and, as an exception to the other specimens by French binders, has been finished with great skill.

Cornillace displayed some very nice, and to all appearance, perfect specimens of small binding, the majority of which were plainly finished.

The only specimen of binding from America was exhibited by Mr. Matthews. This was a royal 8vo. volume, so placed that it could be seen both inside and outside, and certainly as a specimen of binding, its beauty claims great attention.

The French display some very large specimens of stationery binding; the largest, and, I think, the finest I ever saw. A ledger, by M. Alexandre, I should judge to be 2½ft. long, 2ft. wide, and 1½ft. thick. It was whole-bound, in Russia leather, heavily mounted with white metal, and certainly well done. I should have wished to have given a better idea of the way in which the business of bookbinding is conducted in France, but, for the reason already stated, I am unable to do so. At the same time, I cannot help expressing my surprise that more facility was not given to effect this object.

I visited two workshops. The first was that of Messrs. Vigneau et Pasquier, where the common work is carried on. Here they seemed to employ a great preponderance of females and boys' labour. For instance, females prepare the work and lay on the gold, and thus more work is obtained at less cost for finishing. The general style and working of all was less laborious than that of an English shop where the same kind of work is done.

The other workshop that I visited is carried on by the successors to the noted house of Capé. The working and arrangement of this I found to be entirely different from the former; the principal work executed here being the preservation and binding of old and valuable books, the washing and mending of which, though very tedious in process, is here executed with great care and perfection. This is one of the few shops in France or England where the art of bookbinding is carried out to perfection.

I believe there are about 800 journeymen bookbinders in Paris; and I think the trade, as a means of subsistence, is not so far advanced as in England, that is to say, their wages are lower in proportion.

Of their domestic life I cannot speak; but as regards their general behaviour in public, their civility, sobriety, and intelligence, they are in advance of the English working men.

Having spent two Sundays in Paris, and so seen the way in which this day is kept there, I could not help comparing it with the way in which it is observed in England. Although I know full well the power of religion, I feel confident that the Government of this country would

be taking a step in the right direction, if they would concede to the English workman a few of those privileges, so much desired by them for this day, and which our neighbours enjoy. The freedom and enjoyment indulged in on the Sabbath by all classes, both male and female, old and young, without intoxication, profanity, or immorality, surrounded with all the beauties of nature and art, was a sight that would cause any English workman to think that the working man is thought more of in France than he is in England. I also remarked that for order and cleanliness of the streets, open spaces, monuments, public gardens, fountains, and public buildings, Paris is far in advance of London.

In conclusion, I beg to offer thanks to the Society of Arts for the honour conferred on me in selecting me as a representative of my trade, and trust that my efforts to perform the duty required of me will meet with their approval.

LEATHER-WORK.

By WALTER BLUNT,

WORKER IN LEATHER.

IN making my report upon the particular branch of trade upon which I was instructed to report, I have endeavoured to confine myself particularly to the branches of leather-work with which I am acquainted, and also to as brief an exposition of my opinions as possible.

With regard to the quality and character of the work I saw, I will observe, 1st, that as to Russia leather-work, France cannot, or at all events does not, compete with Austria and England. Indeed, from the best information I could obtain, nearly all the Russia leather-work offered for sale in Paris is imported from one or other of the places I have just named. This probably has arisen from the difficulty experienced through heavy import duties in procuring the Russia hides for working, and so fettering competition. This difficulty has not been experienced for some time in England, and to this, combined with our superior mode of working the leather, I must attribute the superiority of English productions. Russia leather-work undoubtedly is only in its infancy in Paris, so that what it may become when the demand for it increases it is almost impossible to say. 2nd, With regard to Morocco leather-work, my opinion inclines in favour of Germany, especially for small work; that is, as far as the artistic excellence of the exterior workmanship is concerned, but for solidity and durability, nothing which I could take as a sample of national skill would, in my opinion, equal the productions of the English manufacturers.

The great object of foreign manufacture appeared to me to be (and this remark applies generally to the leather work I saw in the Exhibition) to produce the highest ornamental effect, without so much regard to what I conceive to be the main elements of production—fineness and excellence, not only of the pattern or design, but of the workmanship and material. The same applies nearly as well to calf-leather work; much, indeed most of this of French production was of beautiful appearance, and in some respects the material surpasses our own. In the production of small work, England cannot certainly be said to compete with Germany, or perhaps France; I mean in the infinite variety of pattern and ornamental design. This I believe to be mainly influenced

by the sectional mode of working in these countries. The English manufacture might be benefited by the introduction of a similar system, as it appears to me that it would more easily occur to the workman to alter or modify the part of the work he is in the habit of making, than to a workman who has to make the whole of an article throughout himself: for it will often be seen that a slight alteration of the section will often produce an entirely novel and new pattern: this must necessarily depend to a certain extent upon the skill of the workman, and also upon the amount of art-education he may have received. In the manufacture of large work, some difficulty would probably be experienced in consequence of the demand for large cases not being sufficient to recompense the employer for instructing his workman in the different sections required. In referring to the sectional mode of work, I think it will be seen that it is detrimental to the workman—in the first place, that it must tend to lower his wages, in consequence of it not requiring so much time and experience to instruct a workman in a section as in the case of one who has to learn the trade in all its branches. Secondly, should a workman be thrown out of employment, I do not think that he would so readily obtain work in his particular section as one that knows his trade throughout. As to this mode of manufacture, I believe it has been in operation some length of time at Birmingham, and I am informed it is being introduced in some workshops in London.

France and Germany, in regard to cost of production, have several advantages over England. The wages of the French artisan are lower than those of the English workman, and those of Germany below even the French. Further, the cost of material (Russia leather excepted) is less than in England, and the general mode of conducting business on the Continent is altogether on a less expensive scale than in England. These advantages necessarily form a very important item in competition, but (repeating my before-expressed opinion) I believe this competition only tends to excel us in the case of small work, such as the "articles de Paris." In this department the finest specimens are those of Herr Klein, said to be the largest maker of this class in the world. In forming my opinion, I have not particularised any article I saw at the Paris Exhibition, inasmuch as I do not consider that it would be a fair standard to judge from, as I am acquainted with several firms in London, that did not exhibit in the Exhibition, who could in my opinion, produce work equal to any I saw—their stationery and dressing-cases more especially.

The French workman, as a rule, is able to live cheaper than the Englishman, his mode of life being entirely different: his articles of food are purchasable at lower rates; his house-rent is cheaper; and his amusements, mainly supplied by the State, are obtainable at less cost than in England; this, probably, influences the rate of wages. In the workshops I visited, I found the workmen generally of steady habits; in many cases possessing ability, and indeed, as a rule, very fair average workmen, and very anxious to give me all the information in their power.

In concluding my report, I would beg to express my many thanks to all the persons with whom I came in contact, whether officials, employers,

or workmen, for their ready kindness, courtesy, and consideration. I must also beg to tender my thanks to the Council of the Society of Arts for the important opportunity they afforded me of obtaining information on many questions, especially affecting the branch of trade in which I am daily engaged.

THE MANUFACTURE OF CAOUTCHOUC.

By WILLIAM BOURNE,

FOREMAN OF INDIA-RUBBER WORKS.

THE manufacture of caoutchouc, or india-rubber, is becoming daily of greater importance, not only to those who are termed the consumers, but also to the many hundreds of families who look to it for their daily sustenance, many of whom are of the humblest degree.

I think it will not be out of place to give a brief sketch of the manner in which india-rubber is obtained and imported into this country, before I pass on to the present state of its manufacture.

India-rubber is a gum, formed of the sap or juice of certain trees, natives of Brazil and India; the best quality of the gum, called para, or bottle-rubber, being obtained from the former place, from a species of tree named the *Siphonia elastica*. The mode of collecting or gathering the gum is carried on in a very rough and careless manner, often to the great loss of our manufacturers, which I shall refer to further on. Some incisions are made in the trees, to the trunks of which are fastened utensils made of clay, into which the gum (or as it is then, a juice, of a very light colour and consistence,) exudes; other forms of clay are prepared, and dipped in this juice, which readily adheres, and after a succession of dips or coatings, the whole mass (which sometimes varies considerably in weight, from 1lb. to 20lbs., but of such size as to be conveniently handled), is then smoke-dried over a fire made of the "inaja," or "umcari" nuts, the smoke from which is of a dense oily nature; the india-rubber is then fit for shipment and transmission to the various countries, where the further manufacture is carried on, viz. the United States of America, Great Britain, France, Belgium, Prussia, Russia, and others of smaller note.

There are several qualities of rubber, among which I may name, in the order of their precedence as to value—best Para, Gummy ditto, East India, West India, Honduras, Carthagena, Guayaquil, Negrobend (an inferior Para), Borneo, Assam, Pernambuco, and African.

Some of these commoner qualities are often used more advantageously for some purposes than a superior quality, as they possess plasticity and pliability in such variety of degrees; the more stubborn sorts, for instance, being best adapted for buffers.

India-rubber, as it is imported, has anything but an attractive appearance. In addition to its unsightly shapes, it contains masses of dirt and other foreign matter, from which it might be kept partially, if not

entirely free, simply by having to superintend the collection or gathering, practical men, whose experience of the large percentage of loss, and the wear and tear of machinery attending the purification, would cause them to take every precaution to prevent the sap coming in contact with any impurities.

Although india-rubber has been in use in this country since A.D. 1791 (in which year a patent was granted to Samuel Peal for waterproofing fabrics), it was not until later years that the manufacture assumed such magnitude and importance for mechanical, domestic, and many other purposes, so numerous indeed as to prevent the possibility of detail in this brief report.

These rapid strides of progress are entirely owing to, and arising from, the process of "vulcanising" the rubber by an admixture of sulphur, and an after-application of heat, the discovery of which, in A.D. 1843, is very justly attributed to Mr. Charles Goodyear, U.S.A., since which the demand has rapidly increased, and will still continue to do so in the same ratio, as we cannot at present conceive its ultimate utility, which is only awaiting the thoughts of inventive minds, to add still further to its numberless appliances, without the aid of which many objects would be unattainable. The first factory in this country was that of Mr. Charles Macintosh, at Manchester, where he first produced the well-known "Macintosh" waterproofs (under patent granted him in A.D., 1823), twenty years previous to the discovery of vulcanisation. I must here note that sulphur was mixed with rubber some years previous to its peculiar and almost priceless worth being known; but little did the first man, who used it unconscious of its power, think what a rich mine of wealth lay hidden therein; for now, instead of one factory only, and a few people employed, there are several very extensive works, and minor ones at every turn, comparatively speaking. Among the largest, I may mention those of Charles Macintosh and Co., of Manchester; W. Warne and Co., Tottenham; the India-Rubber, Gutta Percha, and Telegraph Company, North Woolwich; North British Rubber Company, Edinburgh; J. L. Hancock, London; the Britannia Rubber Company, Bow.

There are many manufactories in France, the most extensive of which is that of Messrs. Aubert, Gérard, and Co., who have also a branch establishment at Harburg, in Prussia. There are several factories in Prussia and in the United States; and, singular to say, but one in the vast empire of Russia, that of the Russo-American Rubber Company, St. Petersburg.

The English manufacture of india-rubber was very well represented at the Exposition Universelle, though the exhibitors had not the space afforded them to exhibit their articles to such advantage as the French, Russian, and Austrian exhibitors of similar articles; for instance, large valves, and whole lengths of hose, belting, tubing, &c., and large rolls of full-sized sheets of rubber, so as to admit of showing at once workmanship and quality. The only instance in which I saw this class of English goods fairly shown was some very excellent machine-belting employed in driving part of the machinery in the Exposition, from the North British Rubber Company.

The Russo-American Company exhibited some valves, buffer-springs, and other articles, of very good quality; some good machine belting, and some well-made sheet. Aubert, Gérard, and Co. showed some good material in valves, buffer-springs, and sheets; and some well-made articles of vulcanite or hard-rubber. The frame of their show-case in the Prussian section was constructed of marbled vulcanite, as was also a very large vase of the same material, which last was worthy of note, from the difficulties experienced in moulding and finishing such an article, even to such partial perfection.

Ray and Co. showed some well-finished toys and figures, in great variety. Fonrobert and Reimann, of Berlin, showed some remarkably long lengths of hose and tubing, which were well-made; but their pyramids of ornamented hollow play-balls, though fairly made, were of a very inferior quality of material.

W. Warne and Co. exhibited some good quality rubber and well-finished articles, in valves, sheet rubber hose, buffer-springs, washers, &c., in which their well-known quality of red rubber took a very prominent part; also water-proof and air-proof goods of the best make and material.

E. Daubree and Co., of Clermont, showed some very good native-thread, cut from the bottle rubber, of very little utility, however, compared with the vulcanised thread, the demand for which is enormous, one firm alone turning out 2,000 lbs. to 3,000 lbs. per day, a great deal of which is exported to France, where it is decidedly preferred to the French make, it being better, both in quality and finish, thereby showing the superiority of the British manufacture. I regret not having been allowed to visit any of the French rubber factories, although every means were tried to obtain admission, but without avail; this did not much surprise me, knowing that each particular house has its own peculiar way of working, and for which each individually is very zealous, thinking no doubt that their own way is by far the best. Still, heedless of that, it would have been very gratifying to me to have witnessed our French neighbours at work, and their mode of procedure.

Permission to visit any works being denied me, I had to make the best of what I could see in the Exposition; and I have only spoken separately of any particular firm whose articles I was enabled to examine closely; most of the cases being locked, I could not form any confident opinion of the articles contained in them, as india-rubber, like many other things, is deceptive at a distance.

Two or three of our English firms are large employers of labour, some employing from 400 to 600 when in full work. The trade fluctuates according to the season, one branch more particularly, overshoes.

In those factories where the manufacture of waterproof garments and overshoes is carried on to any extent, the work generally is of a very light character, and not at all laborious to those engaged in it; and I may say with truth that many of these factories have been proved to be quite asylums, so to speak, for those that, unfortunately, have not had the chance of learning a trade, or of being placed in a better position. India-rubber goods requiring not so much skilled labour or manual strength, as care and attention in making them solid and sound, under the superintendence of a practical man, who is fully aware of the re-

quirements of the article being made. In one factory, with which I am acquainted, a new comer, during his noviciate, is paid at a rather lower rate than the ordinary wages, so as to partly compensate for any errors he may make. After about six weeks, if he has ordinary abilities, he will be sufficiently initiated.

The wages paid to ordinary workmen in England vary but slightly, the average being from 1*s.* to 2*s.* per week of 60 hours, and the wages of women from 8*s.* to 10*s.* per week: there are, however, good opportunities of advancement for those that are persevering. In France the ordinary workmen are paid from 17 francs (13*s.* 7*d.*) to 20 francs (16*s.*) per week, and the women from 8 francs (6*s.* 5*d.*) to 10 francs (8*s.*), and their hours of labour are considerably longer than ours. The system of piece-work is carried out to a great extent in most of our English firms, and the people so employed earn good wages, varying from 25*s.* to 35*s.* per week: but their work hours exceed in number those of the ordinary day-worker.

Women, too, are similarly employed in making up garments, overshoes, and fancy articles, such as tobacco-pouches (of which latter articles as many as 3,000 per day are made in one factory), they being paid so much per dozen.

I have not been able to obtain any returns of the quantities of rubber imported later than for the year 1865; the total amount for that year was 71,392 cwt., the value of which was about £530,000, or an average of 1*s.* 4*d.* per lb.

The average cost per lb. of raw rubber in the year 1866 was as follows:—Para, 2*s.* 4*d.*; Gutty, 2*s.* 3*d.*; East India, 1*s.* 11*d.*; West India, 1*s.* 10*d.*; Honduras, 1*s.* 7*d.*; Carthagena, 1*s.* 7½*d.*; Guayaquil, 1*s.* 6½*d.*; Negrohead, 1*s.* 6½*d.*; Borneo, 1*s.* 5*d.*; Assam, 1*s.* 5*d.*; Pernambuco, 1*s.* 3½*d.*; African, 10*d.*

The consumption of india-rubber in France during the last few years has been, according to Mons. Ballard, 9,000 tons, the value of which in its raw state, he adds, was 40 million francs (£1,600,000), and when in a manufactured state, from 75 to 80 million (£3,000,000 to £3,200,000).

FIGURED SHAWLS.

By SAMUEL BOAST AND JOHN APPLETON,

SHAWL-WEAVERS, NORWICH.

IN the Figured Shawl Department we consider that our Indian Empire was well represented. The acknowledged pre-eminence which it has so long enjoyed for originality of design and brilliancy of colour is fully sustained in the shawls exhibited; but, as far as the apparent value of them is concerned, when compared with those of European manufacture, we must say that we were struck with the enormous difference in the market value of the two productions. It is to the primitive style in which the Indian shawl is woven—involving, as it does, such immense time and labour in its production—that its high price is to be mainly attributed.

The French nation has made a good display of Cashmere shawls, some of which are of the finest possible texture; but, apart from this noticeable fact, we did not observe any striking improvements in the process of their manufacture. The reversible shawl—in which both sides show a perfect pattern—and the application of a double warp to obtain a greater purity of colour, are made prominent features in the French exhibits: but we were familiar with both these novelties, having for a considerable time made the double-faced shawl, and also used a complication of warps in our own looms. The shawl made in imitation of the Indian class we did not think successful, as it is at the best but an imperfect imitation, obtained at a considerable cost. We wish to remark that by the French system of weaving the shuttle is still thrown by the hand, so that the weaver is compelled to have an assistant at his loom; while by the English system, work of a more complicated nature can be performed by the weaver himself, and with much greater ease. We have pleasure in adding that, through the kindness of M. Paul Duche, of Paris, we had the opportunity of examining the shawl-loom of his establishment, and were much gratified by the attention, courtesy, and general information we received from him.

In the German department we did not observe any marked improvement or effect which was not to be seen in the productions of either England or France, and the class of goods generally we thought were of an inferior description.

The Scotch shawls were very meagrely represented, and we were much disappointed at the scantiness of the display. We can only say

pose that this apparent indifference on the part of the Scotch manufacturers may be on account of the slow demand there is at present for shawls generally, and the almost universal change of fashion to other articles of dress. We have, however, good reason to believe that they could at least have made as creditable a display as they have done at former exhibitions.

Norwich has contributed her share by some fine specimens of silk shawls, and we are of opinion that her previous reputation and relative merit are fully sustained and borne out by her present contributions in this branch of industry.

We beg to thank the Society of Arts for the means and opportunity it has afforded us for visiting the Paris Exhibition. We have thus been enabled to compare the work of our own looms with that of the rest of the world, and we hope that we may be able to apply with advantage some of the forms of weaving which are used in other branches of manufacture.

MACHINERY FOR WORSTED FABRICS, &c.

BY JOHN FRENCH,

BRADFORD.

HAVING been appointed, along with two other persons, to visit the Paris Exhibition, and examine carefully the English and French machinery, and to report thereon, I am not insensible to the great responsibility that devolves upon me in such an undertaking, and I will take this opportunity of stating that I shall proceed to a careful scrutiny of the relative merits of the machinery of the two countries, divested of every feeling of predilection in favour of my own country, or any antipathy or any wish to disparage the merits of the other.

On my arrival at the entrance of that magnificent temple, wherein were displayed the results of the genius of an almost united world, and having entered within its portals, it was not long before I found myself separated from my colleagues, and after trying in vain to find them, I determined to make a tour of the outer circle of the Exhibition, wherein was arranged machinery from various parts of the world; some motionless, others going through the various processes for which they were especially adapted.

Not having a catalogue with me of the 42,000 exhibitors, I set off in search of tools and engines, of English, French, Belgian, and Prussian production.

In the Belgian Department I found tools, certainly in some respects taken from our own, with slight alterations made in them, which do not at all improve their efficiency, but clog them with unnecessary appendages, and destroy their original simplicity and usefulness. Taken as a whole, the Belgians are not equal to the English tool-makers of the present day.

The Prussian Department was the next which I visited, and here again I found that I should have to look to England for the real original, although I must say the workmanship was of first-class character, they having imitated us to a nicety in every respect.

In the French Department I found some good tools, and the workmanship not to be despised; but I cannot close my eyes to the fact that even here I found the same thing over again; that most of the tools and other heavy machines, engines, &c., had their origin in England, and were made in France by English workmen.

I now came to the English Department of tools, the first, Sherrerd, Hill, and Co., Whitworth and Co., Sharp, Stewart, and Co.

expressing an opinion upon the tools exhibited by these firms, I must say that in every respect they are of surpassing excellence, and stand unequalled within the area of the Paris Exhibition.

It is admitted on all hands, that the tools exhibited by these firms, especially by the one at Leeds, which has received the gold medal, are deserving the highest praise, in having sustained the honour of our country, by enabling us as Englishmen to stand in the envied position of being the best tool-makers in the world.

Having thus carefully inspected the tools and engines of the four countries which I have mentioned, I proceeded to examine their machinery for manufacturing purposes, and the first of which I have notes was the Belgian.

CLASS 55.—BELGIUM.

This was a complete set of machinery for the manufacture of cloth. There were the "cards," in the first place, which, I must confess, were very good, and appeared to do their work very well. There was nothing about them I had not seen before, and, consequently, I had nothing to learn here. There were also the "roving," "throstle," and "mules;" the "measuring," "dressing," and "folding," which, taken as a complete set, do credit to the exhibitor; and it may with safety be said that this from Belgium was indeed worthy of notice.

MANUFACTURING MACHINES IN THE FRENCH DEPARTMENT.

In looking over this department I examined some machinery made by Mercier, of Louviers. There were three carding engines; the first was "teaser and card." The material from this card is taken from the "doffer" by a funnel on one side, next to the other card, and it drops upon a receiving-belt, by which it is carried to the breast of card No. 2, and placed upon the feed-board, in a diagonal manner, by an upright drawing traverse. After the process of carding, it is again drawn off the doffer by a funnel, and carried to card No. 3, in the same manner I have before described; and in this card it is subject to the condensing process, and in this state it is ready for the mule.

The processes here described may perhaps feed the machine more regularly, if the first be regularly fed, and perhaps might dispense with a few hands where a number of machines are at work, but it is very questionable whether the work would be so well done as when there is some one to attend to it in a proper manner. My own impression is confirmed by what I have seen elsewhere, that the gain would not be so great as some people might be inclined to imagine, and therefore I cannot approve, where I am convinced there is no practical advantage.

FRANCE.—CLASSES 35 AND 56.

This was a spinning frame, a peculiar kind of throstle. The flyer was suspended, and ran on two necks with a whorl between them, and it was driven by a cylinder. The spindle was on a separate rail, and driven by another cylinder. The spindle-rail traversed up, and the spindle had on it a paper-tube. It was spun in the cop-shape; and by a nicely adjusted speed of the flyer and spindle, which ran at different speeds, it was

possible to spin a very fine thread, and as it was the only one in the Exhibition, and as I saw none like it in any of my travels, I set it down as one of the novelties of the present day.

I may here observe that the carriages by which the wool was drawn were similar in every respect to those which I made for Mr. Hargreaves, of Kirkstall-bridge, to apply to the mule, in the year 1845 or 1846.

It now became my duty to look over the English Department, and in doing so I was much gratified to find Englishmen, with whom I could converse more freely.

I was glad to find that one of our Lancashire firms had a complete set of machinery for cotton, from the "scutching machine" to the "mule" which spins the thread.

This machinery is worth the time spent in its examination; and, I must say, great credit is due to them for the pains which they have taken to show their machinery, which is of the highest class, and second to none in the Exhibition; and I think that they themselves must derive satisfaction from the great interest taken in it when working, by the crowds of spectators who throng around them, to see the whole of their machinery in motion.

The next machinery I noticed were the Lancashire looms, made by Cook and Hacking, as well as those made by Smith, Brothers, of Heywood, both of which are very good. The price of the plain loom made by Cook and Hacking was £7; the Jacquard loom was £15. The loom made by Smith, Brothers, was intended for the weaving of cloth, and had very peculiar motions about it, one of which was the slay-board: it is motionless while the shuttle is being picked across. The looms, altogether, do credit to the exhibitors.

The next that came under my observation were the looms from Keighley and Bradford. With respect to these looms, I think it is impossible to find any within the precincts of the Exhibition, or elsewhere, to compare with them; and had it so happened that I had been a native of any other place than one of these towns of whose productions I am speaking, I might have particularised, and spoken more freely, upon their respective merits; but in consequence of being acquainted with, and enjoying, as I trust I do, the personal friendship of every exhibitor, I do sincerely hope that they will excuse my declining to express an opinion, which might be considered to be in favour of one more than another; therefore, I can do no more than say of them, as a whole, that they have maintained the position that Yorkshire has held so long, and one which, I trust, she will hold for a lengthened period to come.

The next machine to which I directed my attention was one patented by Augustine Vimont. This machine was somewhat similar in principle to one I had seen tried by Mr. Joseph Greenhough, when he occupied a portion of Marshall's mill at Bradford, a great number of years ago. It is introduced at present to supersede the mule. There is a ring fixed upon the lifter, round which the thread from the roller passes from thence to the spindle, which can be set to any height, to suit the material which is being spun. The lifter is the traverse, which distributes twist on the spindle. The spindle is driven by a cylinder, and runs wit

great velocity. The carriage in which the draught is effected is very peculiar, having two fans, working in contrary directions, at a good speed, between the back and front rollers, to equalise the thread. The proprietor states that he can produce as much again as on the mule, which statement I am not disposed to credit, inasmuch as, from what I saw while the machine was working, he could obtain no such results.

MACHINERY FROM ROUBAIX.

There is one spinning frame in the Exhibition, which has been made at Roubaix, on a rather less scale than those which are made at Bradford.

I was very glad when I saw there was a frame of the Roubaix make, but was sorry indeed to find that it was not in working order, and, consequently, could form no judgment of its capabilities as a machine. I subsequently discovered, when in another part of the country, that this identical frame had been tried, but would not answer the purpose, and was afterwards placed in the Exhibition, but with what intention I cannot say.

Finding things in this state, our next inquiry was, "Has France the machinery here with which she makes the yarns and pieces which we see in this Exhibition, or is it in another place, with an impassable barrier between us?" The answer was given by a Frenchman, "It is not here. I am myself connected with manufacturers, and it would not answer our purpose to show them in this place."

The next step to be taken at this time was one surrounded with anxiety and doubt. To gain admittance to their places of manufacture was no small matter to contemplate; but it must be done, or we should have had to return home without that very information which it was our sole object to obtain.

In anticipating such a result, we had requested M. Haussoullier to be good enough to write to several firms in different parts of the country. I believe he wrote about twenty-one letters, a few of which were answered favourably, and comprised among them some of the largest establishments in France.

OUR VISIT TO RHEIMS.

Upon entering the manufactory of M. Danphinet, we were first admitted into the office; and the first thing that arrested my attention was an article which had been made to test the strength of yarns intended for weaving. It was a beautifully-made instrument, so arranged that a weight could be suspended to the yarn, and should it bear it for the space of five seconds, it was considered strong enough to be woven in a loom driven by power, but should it break in the experiment, the material was thickened a little, not twisted harder, to enable it to bear the weight the required time, and the process was concluded. The instrument was neatly made, and very simple in its construction.

We then proceeded to inspect the raw material, which had to be subjected to the various processes, among the machinery, and found it to consist of French, Prussian, and Australian wools, by far the greatest bulk being Australian.

We were then introduced into the department where the machinery was, and the first that attracted our attention was the "washing rollers." We found them to consist of three pairs, through which the wool had to pass before it was considered thoroughly washed; and from the last pair it was thrown into a skep by a quickly-speeded fan, to be taken from thence to the dry-room.

The drying-machine was a steam-box, about 6 yds. long and 3 ft. 6 in. wide. The wool was conducted through a heated chamber, on an endless chain, underneath which were three fans, revolving at a quick speed, to agitate the rarefied air, and to assist in drying the wool, which was ultimately discharged at the other end of the machine into a box placed there for that purpose.

It was taken from this machine to go through the oiling process, it being considered by this firm that some sorts of wool require a little oil in the early processes through which they have to go. The application of the oil is strictly confined to one man, appointed for the purpose, who is very careful in distributing it equally over the various layers of wool to which the oil has to be applied.

The process of oiling being concluded, it is then taken to a double-cylinder carding-machine, and with the greatest care arranged on the feed-board, with the ends of the fibres pointing in a proper direction towards the cards, and it is delivered from the doffer of this machine on to a balling-head, and this concludes the carding process. It is then taken to the back washing-machine, and instead of a great number of them going through in a bulk, each ball goes through singly, and consequently is thoroughly washed and dried in its passage, to be again formed into a ball. It is then taken from the back washing-machine to the combs, some of which are almost similar to those of Mr. Rawson, but I believe they are made in France. I must here state that the preference is given to Schlumberger and Co.'s—a small machine, adapted for fine wool, and although they do not comb a great amount per day, the deficiency is made up by having a great number of them.

The next process is that of "drawing," and this is a very important one. The first machine is neither more nor less than a balling-head. The back roller, which in this machine consists of two sets, is about 2 in. in diameter, and revolves on movable stands, so that it is easy to vary the length of the ratch when it is necessary, but that is not often the case. It then passes from the back roller, sometimes over a carrier, but frequently without one, then over a porcupine, which is placed close to the front roller. This roller is about 2 in. in diameter, the porcupine about the same. It then passes forward to a balling-head, and the first process of drawing is completed.

The next process is about similar to the last; but as the material proceeds in its course, the diameters of the back and front rollers, together with the porcupine, gradually diminish, until at last, when it comes to the "roving," the diameter of the back roller is about an inch, the front roller the same, and the porcupine even less than that. In this process, when it has passed the front roller, and proceeds in its course to be formed into a ball, it is delivered in two distinct rovings, and separately rolled together by vibrating leathers. It then passes through a guide on to the

balling-head, apparently one roving, but in reality two, and in this state it is taken to the mule, after having gone through, according to the workmen's statement, twenty processes to bring it to this state of perfection; and during the whole of these processes it has never undergone one single twist per inch.

The mules of this establishment consist of about 600 spindles, each with a carriage similar to those which I have previously alluded to, and which I made for the purpose of drawing Indiana wool. They have back rollers, two rows of carriers, and a front roller, all of small dimensions. The top carriers are made of iron, about three-quarters of an inch in diameter, which I found in this establishment to be of great utility, from the fact that our guide took them off to show us how twitty the yarn was without them. The "top-pressing," back and front, are both weighted with one lever, having a small weight attached to the end thereof. It may be here remarked that the mules, as they are wrought here, are upon a somewhat different system to that worked in our own neighbourhood. With us a certain amount of material is let in, and the spindle-carriage draws it out to its full length; but with those in this establishment, the front rollers continue to draw the wool till the spindle-carriage has got to its extreme distance.

We next proceeded to the "weaving department." Here I find a little difference in the looms from those made at Bradford. The alterations they have made I do not approve; for instance, they have a casting bolted to the upright picking-shaft, instead of a stud and cone, which I consider much easier for picking, in consequence of the cone revolving. They have also another plan, somewhat different to our own, which is, instead of working the treadles from the end of the tappet-shaft, they work them from a cross-shaft, geared with bevel wheels to the low shaft, and the treadles work in the centre of the loom underneath. I do not know the reason why they have adopted this plan, as I cannot see any benefit to be derived from it.

There is one remark to be made here, which is, that the pieces have to pass through two rooms, in each of which are kept a number of work-people; in the one, all the pieces are examined to detect flaws if there be any, and to mark the same; and in the other room these defects are remedied, so that it is scarcely possible for the human eye to find where the imperfections have been.

The next process to which the piece is subjected is one which I think worthy of notice, and the machine through which the piece has to go is the first I have ever seen for the same purpose, that of dressing worsted pieces; for the sake of illustration, I will compare it to a loom having two slay-boards placed in it.

On each edge of the wood-work is fixed a plate, with square edges, projecting a little above the top, and between these plates are adjusted knives, with a peculiar edge, for the purpose of dressing the piece. There are also rollers in the machine, some of which are stationary, over which the piece is drawn, in order to stretch it very tight, and a beam on one side on which to roll the piece.

The machine is then set in motion, and an astonishing process commences, by the piece being drawn and tightly stretched over the four

square-edged plates, placed upon what I have termed the slay-board, so adjusted as to prevent the knives from injuring the piece: and by moving backwards and forwards at a rapid rate, it is truly astonishing what a fine appearance the material presents after being submitted to this process of dressing. After having gone through this machine, it is then ready for the process of dyeing.

The number of horse-power at this establishment is about 220; the number of hands employed is about 800; the mules contain about 1000 spindles each, and five persons superintend two of them, or about 1,600 spindles. This firm has altogether about 20,000 spindles. They use Schlumberger's combs, and have about forty of them.

We visited another establishment, where there was weaving only, the whole of the looms being of Mr. George Hodgson's make. The regularity and order kept in this establishment were very good. In the machinery I have nothing particular to remark.

Our next visit was to Mr. Holden's large combing establishment, but our stay here was of short duration, in consequence of our having to start for Paris in about an hour's time, or extend the period of our visit to the next day. We however decided that, as there were only carding and combing processes going on, we would take a sharp survey of the interior of this vast magazine of industry, wherein were working 160 carding engines and 100 combing machines, which are all fully engaged night and day. Here are kept a great number of mechanics, who make their own machinery, as well as repair it. The combs are of their own invention, and I believe they are patented. They are in some respects similar to what I have seen before, with the exception of the filling part, which is accomplished by two eccentric motions, which, according to my opinion, do not work so neatly as the nip which is applied to Mr. Lister's combs.

Our next visit was to Henri Delattre, Sen., and Co., at Roubaix. This is the Bradford of France. Here, for the first time in all my travels in France, I find machinery which has been made in England for the purpose of preparing and spinning. This machinery was made by William Smith and Sons, Keighley. The preparing is in every respect similar to our own, and the spinning has been made especially for "mottled yarns," with two rows of bottom-back rollers, the "top pressing" working between them. I found their newest frames had larger busses on the front roller than usual, they being five inches in diameter—an alteration of which I do not approve. The spinning-frames contain about 148 spindles. The place is conducted in very much the same manner as our own are. I observed, however, one little difference—which was, that two young men were continually walking from one end of the room to the other, and their sole duty was to see that no bad pieces, or sullied yarns, or any other imperfection, were allowed to pass on to the bobbin. While I passed through the room I saw them call the attention of more than one spinner to what they considered imperfect yarn, so that here we see the same great care is manifested which characterises all the manufactories which we have visited in France.

In the other room we find the preparing is adapted for the finer sorts of wool. The "gill boxes" have been made by Mr. Edward Duce, and are considered by those who use them to answer the purpose well. I

beg to observe that I should have approved of them if they had had a less number of "fallers up," believing, as I do, that whatever breadth of fallers you have more than the length of the wool which you have to draw, are all useless, and so much additional wear and tear.

In the carding and combing rooms we found a number of two-cylinder carding machines, which had been made in Belgium. They were of a lighter description than those made in this country, and consequently not so steady, or so well calculated to do the work required of them. They were just commencing to work two carding machines which had been made by Thornton, Brothers, of Cleckheaton. These machines were much stronger, and in every way better arranged to answer the purpose for which they were intended.

The combs are in principle almost similar to Mr. Rawson's and Mr. Holden's; but there is another, a rather curious one, the whole of the "faller carriage" moving forward to fill the comb. The material was embedded in the comb by a dabbing brush; the "faller-carriage" then receded, the comb drawing the wool through the fallers as it did so, and in this manner this cumbrous machine did its work. The preparing for the combs was much the same as that which we have in this country, and, therefore, I have no remark to make upon it.

Having gone through what I will call the Bradford part of the manufacture that was being carried on in this place, we were then admitted into the other part of the establishment, wherein was at work similar machinery to that which we had seen elsewhere in France.

Now, I beg leave to state that here, as at all other places we have visited, the same great care is taken that everything they do is well done. This, I consider, to be one of the first essentials in any manufactory, and one which, I think, ultimately tends in a great degree, together with the machinery they apply to the purpose, to account for the superiority they possess in the appearance of their highly-finished goods.

I would observe here that there is some difference between the amount of wool which is put through the machinery at Rheims and the quantity they put through here at Roubaix. I cannot see the reason why they should put more through here than at Rheims, because, whatever amount is put through, it has to be reduced to the spun thread at last, and I would, therefore, give my opinion in favour of the practice adopted at Rheims, that of confining themselves to a less bulk of material in their first process of drawing.

Leclercq-Dupire.—This gentleman at first was not so free, and refused altogether to have anything at all to do with us; but on entering into conversation with him, we very soon found out that he was a determined enemy to free trade. He considered that the town of Roubaix was sold, and that the treaty effected by the efforts of Mr. Cobden was inflicting serious and ruinous effects upon the manufacturing industry of France, and especially that of Roubaix.

He charged us with being commissioned to ascertain their method of business, and then return home with instructions to enable our manufactures to compete with them more successfully. Now, I am very glad to say that before we left this gentleman, he not only showed us his pieces

in stock but gave us a sample, as well as recommendations to visit other places, one of which was refused, and to the other we gained admittance. I might as well here state that it was from this gentleman that we received the information that connected with the trade of the town of Roubaix there are about 15,000 power-looms and more than 200,000 hand-looms.

Our next visit was to Tourncoing. The machinery here, although made in France, was on a larger scale than any we had yet seen of the French make. The processes were much the same. They spun upon the mule; and throughout the whole of the establishment the same care was taken in all their processes that we had observed elsewhere, a characteristic feature of the French factory workpeople that has come under our observation.

Our next visit was to the manufactory of M. Seydoux and Co., at Le Catiau. This I should consider the largest manufacturing establishment in France; and at this place every attention and kindness were shown towards us by the principal partners of this firm. From the moment we entered these extensive works, which was at half-past six in the morning, to our departure, at three o'clock in the afternoon, our guide did his utmost to oblige us in every respect, by taking us through every room where the processes were going on. And here I must confess that, having been myself employed in several large firms in Bradford, and having had frequent opportunities, in consequence of my business, of visiting other manufactories in the kingdom, I was really struck with astonishment at the cleanliness, the order, and regularity in this vast but well-arranged establishment. This is the place in which the yarn was drawn and spun to the enormous and almost incredible length of 310,000 metres to the kilogramme.

To give you a description of the machinery would be almost to repeat what I have said with respect to Rheims, but for this difference, that as they make all their own, I must confess it is of the highest order, and that no labour has been spared to adapt it to its special purpose. It would be well to mention here that the number of balls which one of their drawing-boxes delivers is sometimes four, sometimes eight, or even ten. What I would call one of their finishing-boxes delivers about twenty balls, and what I would term their "roving-frame" delivers from fifty to sixty balls, and by the material going on to the ball double, they may be called from 100 to 120 single rovings.

The machines are long, and not so wide; and, taking into consideration a set of drawings of our own make, together with the creels, it is my opinion that they could almost place two sets in the same space where we place one; and as their processes are all open drawing, and consequently not so heavily pressed as ours, it is reasonable to suppose that they will not require as much power to drive them as in those boxes where there are spindles and heavily-pressed "top rollers."

We next visited the weaving department. The weaving here is very good; some of the pieces are of the very finest description, and the looms have been made at Mr. George Hodgson's. The old process of warping is dispensed with here, as well as at Rheims, as they warp upon the loom-beam from a great creel; the warp then goes through the pro-

cess of sizing, and is dried by fans in its passage on to another beam. It is then taken to the twirling-frame, and after that process is gone through, it is taken to the loom. They have at this place 320 horse-power, 1,000 power-looms, 3,000 hand-looms, 50,000 mule spindles, and are about to increase them to 65,000, and augment their moving power to 500 nominal horse-power.

This ends our inspection of machinery.

If an inquiry like this had been instituted twenty years ago, it might have answered a good purpose. I hope it may do so now, for you may depend upon it that every exertion is being made to supersede us altogether; and, without some great effort on our part be made, the time is not far distant when such will be the case. I have every reason to believe that men are sent over to this country, whenever they hear of anything new being adopted, to ascertain all the particulars about it; and if it be practicable, and will serve any purpose of utility, it is not long before it is adopted by them. I still, however, think that by one great effort of a united people, England may, by the determined perseverance of her enterprising spinners and manufacturers, aided by the indomitable energy of her sons of toil, win back, perhaps not her pre-eminence, but an equality, which she may successfully maintain among the nations of the earth.

I wish here to say one word upon the patent laws. I have for some time directed my attention to this subject, and I have come to the conclusion that they operate prejudicially to the advancement of genius—simply from the fact that the specifications of most of the patents embrace a great many things that an inventor never intends, and perhaps never can realise, and thereby prevent other men of genius from applying themselves to the study of principles which have been specified by another inventor, who never really intended to carry them out.

Now, if an arrangement could be made by which any man who introduces an invention worthy of notice could be rewarded for it from a national fund—the amount being awarded by a committee of scientific men nominated for the purpose—I sincerely believe that we should have great exertions made by men who, according to the present system, with all its attendant evils of litigation for infringement, have no chance of receiving any benefit from what they may introduce, and consequently abstain altogether from contributing to those improvements by which mankind are benefited.

In conclusion, we would tender our warmest acknowledgments to M. Haussoullier, for the manifold exertions he made on our behalf in writing for us a great number of letters to the mayors of towns and various manufacturers of France; for the trouble he took in writing to various railway companies, and obtaining for us permission to travel at half-fares on their respective lines; for the gentlemanly bearing and urbanity of manner he manifested on all occasions when we came in contact with him. We would also include, in this sincere expression of our regard, all those gentlemen by whose kind permission we were allowed to go through their respective establishments.

To all those gentlemen who were applied to who did not receive us with the hand of fellowship we would express our pity and forgiveness;

and although some of them, from the high position which they held in their respective towns, might have favoured us had they possessed the will to do so, they still refused us the hospitality due to strangers. We would beg to assure them, that should we ever have an opportunity of doing any of their countrymen a service, our endeavours, we sincerely trust, will be devoted to return good for evil.

I have now the pleasing duty to thank you for the honour you conferred upon me by appointing me to visit the Paris Exhibition; and, at the same time, to assure you that, could I feel conscious that I had given you satisfaction in the discharge of that important duty, I should ever remember the appointment with unaffected gratitude.

WORSTED YARNS AND MIXED TEXTILE FABRICS.

By GEORGE SPENCER,

BRADFORD.

WE arrived in Paris on the morning of the 18th September, and spent the day in making a general survey of the Exhibition, commencing the following morning with the examination of worsted yarns and manufactured goods. In this we had the difficulty of gaining such admission within the cases as would allow us opportunity for close scrutiny; however, by the kind assistance of Mons. Larsonnier, on the Saturday this permission was granted us.

French fabrics we found exhibited in great variety, and arranged with exquisite taste—merinos, reps, poplins, cashmeres, of splendid quality, and of colour strikingly bright and clear. In this branch of manufacture, I think that we must own French superiority.

The case exhibited by Messrs. A. Seydoux, Sieber, and Co., comprised tops, yarns, and manufactured goods, of first-class order. Here is shown yarn spun to 310,000 mètres per kilogramme, equal to 274 hanks per lb., our mode of reckoning, and warp equal to 134's, made from Australian wool. We did not find, on going through their works, that these counts were of general use, but simply produced for exhibition.

Messrs. Henri Delattre and Co., Roubaix, exhibit in great variety manufactured goods, all wool, silk and wool, wool and cotton, silk, wool, and cotton. In this case we found articles competing with the production of our own town.

Messrs. Geo. Hooper and Co.'s show of goods, all wool, silk and wool, is a magnificent display. To this firm is awarded the gold medal.

The case shown by Messrs. Larsonnier, Frères, et Cheneat, contains a collection of tops and yarns, chiefly Botany, well combed, and of good colour. They exhibit, in manufactured goods, cobourgs, reps, and poplins.

Messrs. Givélet and Co., Rheims, make a good show of carded wools, and also of combed wools, yarns and fabrics of combed and carded wools. In other respects, similar to preceding cases.

The collective show of Roubaix is of an extensive character, comprising, along with merinos, reps, poplins, &c., classes and qualities nearer the description of goods made in this market. The mixed fabrics exhibited, although chiefly in good qualities, have not an appearance

equal to Bradford-made articles; but undoubtedly they are gaining rapidly upon us. In regarding this collection from the Bradford of France, one thing struck me as being noticeable, namely, that the articles appeared to have been made expressly for exhibition. I learnt from several parties in Paris, and also in the manufacturing districts, that this was the case. After examining, as well as circumstances would allow, this case in particular, we turned our attention to the English department. The disposition of the goods in this department had probably not been arranged with French taste. Its *tout-ensemble* is not so effective as the one from Roubaix, perhaps partly attributable to the fact of our beginning with lower qualities than those exhibited by French manufacturers. This show is undoubtedly less attractive than many of the French cases; yet, in such articles as are exported to France in great quantities from this district, prices and appearances being taken into consideration, we undoubtedly still excel. The difficulties in arriving at the cost, in comparison with the cost of our own, we found to be insurmountable.

MACHINERY.

In this department the French show extensively. Messrs. Stehelin and Co. exhibit a set of French preparing, through the whole of which the material passes without twist; in lieu of gills, they adopt porcupines, revolving close to the front rollers.

In a set of carding machines contributed by Monsieur A. Mercier, Louviers, are three cards which feed each other, the material passing from the front of the first, by means of a funnel, on to a strap, which conveys it to the second, and so from the second to the third. The third is a condenser, preparing the wool for the mule. The price of a set made on this principle, according to quality of workmanship, varies from 5,000 to 8,000 francs.

Monsieur A. Vimont exhibits a piece of machinery (called by the French "continu") which is supposed to do away with the carriage of the mule, having two rollers working oppositely, in shape like a fan with three wings; this is certainly a piece of ingenious mechanism; in its present state perhaps not very practical.

Messrs. J. and S. Smith, of Keighley, are the only exhibitors of worsted spinning machinery which is of first-class character.

In the weaving department we must take the credit of being unrivalled by our neighbours, both in quality, design, and cheapness. The prices for ordinary plain looms, French-made, are from 400 to 750 francs each. Further detail in this important branch will be furnished you, undoubtedly, by my colleagues.

On Thursday, the 26th September, we proceeded to Rheims: population 50,000; 13,000 hands engaged in factory labour, and about 20,000 in hand-loom weaving. We visited the works of Messrs. Dauphinot, Frères; these gentlemen received us very kindly, and showed us round their premises, giving us all the information we asked. They use principally French, Australian, and German wools, French wool unwashed, soft, silky, and of good spinning quality.

The washing process is through a pair of common rollers, forked up by hand from the bowl to the rollers; from thence, by means of a spiked

roller, revolving quickly, it is thrown off into a basket. Although this process is original, yet great care is exercised to have the wool beautifully clean and white.

The drying machine is exceedingly good, an endless chain or apron, carried round by rollers, steam and fan underneath, about eight yards long, and covered over with an iron box; the wool is put on wet at one end, and is delivered dry at the other; three per cent. of oil is then put on; it is next carded, back-washed, and then combed, going through about ten operations in the combing and twelve in the drawing.

The drawing is entirely without twist in the last two or three operations, in which the slubbing becomes small. It passes between cloths, each cloth stretched by two rollers, which receive and carry it forward, the rollers at the same time working transversely; in this way rubbing or rolling it together, imparting firmness sufficient for it to be drawn off at the next machine. The principal fabrics manufactured in this place are merinos and shawls. We did not see a single cotton warp in Rheims. The warps are all passed through a strong sizing of glue. Weavers here mind two looms. In the mule-spinning, boys make—say 75 cents.; young men, from 1½ to 2 francs; and the head man, or spinner, 3 to 6 francs per day. Time of work, from 5.45 a.m. to 8 p.m.; one hour and three-quarters for meals, making 12½ hours work per day for the whole six days.

By the kindness of Messrs. Dauphinot, who gave us letters of introduction, we were kindly permitted to go through the works of Messrs. M. Villemont-Huard, Rogelet, and Co.'s extensive premises, similar in character to those of Messrs. Dauphinot, Frères. The premises form three sides of a square, are particularly well arranged, and every facility given for expedition. The raw material enters at one end, and the manufactured article is delivered at the other. Here is in work a drying-machine, like the one used by Messrs. Dauphinot, and which is much preferred to our common fan-machine, requiring much less labour. In the shed are 19,000 spindles, some single machines having 900 spindles each, two of which are minded by four men and two boys. This firm runs 500 looms in the merino trade. From the looms the pieces pass through several hands, who crop them, sew in any broken threads, and take out all stains.

Monday, Sept. 30, at Roubaix.—We visited the works of M. Henri Delattre, and found here throstle-frames—the only ones we saw in France. This is a very large concern. Spinners and weavers are paid by piece-work, each spinner doffing his or her own side; all are one-side minders. A variety of wool is used here—French, Botany, Irish, African, Adrianople, Persian, Iceland, &c. We were not allowed to examine the weaving in this establishment.

We next called upon M. Leclercq-Dupire, and saw his weaving. This gentleman informed us that there were in Roubaix about 15,000 power-looms, and about 200,000 hand-looms in the whole district. In a conversation with him, we found that he felt somewhat aggrieved at the introduction of the new tariff. He considered that their Government had sold their trade to England, and attributed the present state of trade to this want of protection. He complained of our robbing them of

their trade, by underselling them both in yarn and goods, and also of the disposition in Paris merchants to lean towards English-made fabrics. Before the introduction of the new tariff, Parisian merchants went to Roubaix; now the scale is turned—Roubaix manufacturers must go to Paris. In his list of complaints he particularised instances in which he, along with other Roubaix manufacturers, had been denied admission into Bradford manufactories.

We visited the premises of Messrs. G. Lesquière, Messrs. Christoric and Co., and Messrs. Felix Hubert and Co.—all spinning concerns. In some of these we had an opportunity of seeing low numbers—24's, &c.—made from Irish and African wools. Machinery similar, both in preparing and spinning, to that used for merino purposes. Spinners here earn from four to five francs each per day of twelve and a half hours.

Wednesday, Oct. 2nd.—By the kind permission of Messrs. Aug. Seydoux, Sieber, and Co., we inspected their works, the largest and most perfect of any that we had seen. Staple manufacture, merinos. They have 50,000 spindles, 1,000 power-loom, and 3,000 hand-loom, employing about 10,000 hands. I may mention here that this firm work their wool entirely without oil. Spinners are paid here also by the piece; spinning wages, on say 50's., approaching nearly 3d. per gross.

Although we were generally kindly received, yet still we regretted that we were not able to gain admission into works engaged particularly in sorts and classes of articles more nearly approaching our own; in mottles, cords, orleans, cobourgs, &c.; in this branch, judging from the most reliable information we could gather, we still, in spite of present duties and expenses, have room for successful competition.

For the production of merinos, their processes are not to be rivalled by ours; yet still, seeing that the material in bulk is bought in our own country (London sales), the adoption of this branch of an immense trade is quite within our reach, and why should not Bradford eventually succeed in it?

We are in duty bound to acknowledge, and to tender our grateful thanks, to the various gentlemen who behaved so kindly to us, especially to Messrs. Dauphinot, Frères, Mons. Leclercq-Dupire, Messrs. Seydoux, Sieber, and Co., not omitting M. Haussoullier, agent to the Society of Arts in Paris.

In conclusion, allow me to express my sincere thanks for the honour conferred upon me, in appointing me a delegate to the Paris Exhibition. The responsibility of the undertaking I feel, and shall only be glad if, from the few memoranda collected, such information may be gathered as may be satisfactory to you.

WORSTED AND MIXED TEXTILE FABRICS.

By DANIEL ILLINGWORTH,

BRADFORD.

BEING appointed to proceed to Paris for the purpose of examining and comparing our goods with those of France and other countries, we left Bradford on Monday, Sept. 16th, by the 12.40 p.m. train, and arrived in Paris on Wednesday at 7.30 a.m.

After taking a general survey of the Exhibition, we began looking at the Bradford goods. We found various makes, including lastings, camlets, cords, a few Cobourgs, Orleans, various stripes and mottled fabrics, nothing made for the special purpose of show, but goods taken from our present stocks; similar goods can be seen in our market at any time. They are made from cotton, wool, and silk.

In looking over the fabrics of continental manufacturers, the French, I must say, are superior to any other, both in quality and dye. No comparison can, however, be fairly instituted between goods made of all-wool, wool and silk, and goods made of mixed wool and cotton.

We were told in France that we could not dye merinos, that when they sent them in the grey to England they had to be sent back to Paris to dye and finish. Their merino wett and warps are carded and spun without oil, to which is attributed the deficiency of our shades; but if we cannot dye the French goods, which are without oil, our dyers must find some other excuse.

In looking over the French goods in the all-wool, wool and silk, the merinos are particularly good. The reps, made of all-wool, and wool and silk, are beautiful. They have also the plain poplin all-wool, which is also good; of these they have an enormous and most varied display. No prices were affixed to the French goods in this class; but, from the fineness of the quality, they must be very costly. They are goods that will not be extensively made in England. The competition is so pressing that we are obliged to make a cheap article.

The collective show of Roubaix was good. Upon inquiry we found that they had been made expressly for show, regardless of expense. This contains goods similar to the Bradford manufactures in mixtures of cotton, wool, and silk fabrics, but nothing new in design.

Messrs. Delattre, Sen., and Co., had a first-class show of merinos, poplins, reps, and mottled fabrics, which had been made regardless of

cost, and of superior material to any that I saw afterwards in the working process.

The goods shown from Roubaix are superior to ours in quality.

On visiting Roubaix, we encountered much difficulty in gaining admittance to the places of business; and where we were allowed to see the combing, drawing, and spinning, we were not allowed to see the weaving; and only in one instance did we succeed in doing so, but in that we found nothing to learn. In Roubaix we found some of the lowest classes of wool in process, and spun into worst.

We next went to the manufacturing town of Rheims, where we were well received. We visited several firms in the town and district. There are made poplins, reps, cashmeres, and merinos, the last-named being the principal manufacture. We visited the firm of Dauphinot and Brothers, who have a good show in the Exhibition of reps, cashmeres, poplins, yarns, tops, wool, &c., but merinos are their principal make at present. The woollen warp is spun in single threads, on cards, then it is taken and twisted twofold on to a roving bobbin, from which it is warped on to a beam to form one-sixth of the warp, then it runs from the six beams on to one, and as it runs from the six beams it passes through a size of glue and water; when it comes out of the size every end is separated and dried with two fans before it reaches the beam, and all this is managed by one girl. There are no dressers, no warping mills, and very little labour attending the process. This method of sizing and beaming is nothing new; it is similar to the cotton process.

There are both one and two-loom tanters; but, as far as we could see and learn, quality is more sought after than quantity. We noticed a first-rate machine for finishing or cleaning knots from the face of merinos and other fabrics. By this machine, the superfluous ends, &c. are shaven off, and, at the same time, the ground is raised, by which process a richer appearance is given to the cloth. This machine is in the form of two going parts of a loom, and works the same way. The pieces pass over the surface of the going part, where a peculiar knife is fixed which takes off all fibres. A great number of women are also employed to clean the pieces, and every care is taken to make them as perfect as possible. In one piece-room were 50, and in another 25, of those women employed. If an end was out it was sewn in, and all ends or fibres out from the edges, and superfluities of every kind cleared off.

We visited the firm of Messrs. Seydoux, Sisher, and Co., Le Catiau. This is the largest firm in France. We noticed their case in the Exhibition. It consisted of reps, poplins, cashmeres, and merinos; a really first-class show.

We noticed a very good case from Prussia, of goods similar to our own.

With regard to machinery, we found it very difficult to gain admittance to the French department; at last, however, we succeeded, and on examining the looms, we did not find anything to learn. There was the plain and drop-box loom, but nothing new, and none equal to the Yorkshire looms for the Yorkshire trade. We consider it unnecessary to dilate upon the excellence of our looms.

In the Exhibition we were indebted to Messrs. Larosnier, Brothers,

and Co. for the opportunity of closely examining several cases of French goods ; they very kindly opened not only their own case, but others, for our inspection ; they also gave us samples.

There are few goods exhibited by the continental manufacturers for the use of the middle and working-class. The Bradford goods are most suitable and substantial ; and the surprising cheapness of these fabrics, it is hoped, will attract the attention of our foreign merchants interested in this class, and obtain from them a due appreciation, and stimulate a demand for our goods.

FRENCH HORTICULTURE.

By GEORGE STANTON,

GARDENER.

THE following report is compiled from notes taken at the Paris Exhibition, at various public and private gardens, parks, &c., and at the flower, fruit, and vegetable markets in and near Paris.

That part of the Paris Exhibition specially devoted to horticulture was an enclosure occupying about one-fourth of the park surrounding the Exhibition building, and called the Reserved Garden. It was artistically laid out, and contained between 20 and 30 glass structures of various sizes, and kept at different temperatures. These were available for the more tender plants exhibited. Numerous beds were judiciously arranged and effectively planted with exhibitors' collections. A space was devoted to horticultural implements and appliances; also to a horticultural library. Other parts of the park contained objects of considerable horticultural interest. Large named collections of trees and shrubs were exhibited near the entrance from the Pont de Jena. Indeed, the whole park was well planted, and embellished with occasional groups of flower-beds, &c. Much information was also to be obtained from Billancourt, in arboriculture or fruit-tree training.

The horticultural exhibitions were of two kinds—the permanent and the fortnightly. The former included collections of conifers, shrubs, and trees, the fruit-garden, &c. These remained from the opening to the close of the general Exhibition. The latter included collections of tender plants, flowering plants in their season, cut flowers, fruits, and vegetables. The permanent collections almost entirely furnished the reserved garden, and the periodical exhibitions assisted greatly to embellish it. The exhibitors were, with few exceptions, French; so the horticulture of other countries was not well represented, and it could scarcely be called an International Horticultural Exhibition. There have been but two or three English exhibitors of plants. The Messrs. Veitch, of Chelsea, have figured conspicuously in the permanent as well as in the serial shows. Belgium and Holland have contributed some collections. The new and rare plants of M. Linden, of Brussels, as well as those of the Messrs. Veitch, were remarkable. It was noticeable the small number of collections from private establishments exhibited by head-gardeners. In England such collections usually predominate at the horticultural shows. By far the greater number of French exhibitors were nurserymen, horticulturists, florists, or horticultural societies.

For convenience, I shall divide the following report into three divisions :—

- 1st. Flower and ornamental gardening.
- 2nd. Fruit and vegetable gardening.
- 3rd. Horticultural implements and appliances.

FLOWER AND ORNAMENTAL GARDENING.

I must here make one general remark—it was pre-eminently noticeable in Parisian gardens, and, I believe, in French gardens generally—the preference given to plants with large, fine, or ornamental foliage, both in their in-door and out-door decorations, and the comparative scarcity of flowering plants. In England the reverse is prevalent, and our collections would certainly be greatly improved by a more liberal mixture of fine foliage plants, to bring out a better balance of the two ; at the same time, I do not think it desirable, or tending to a real love of gardening, to make such an extravagant use of foliage as the French do. I do not mean that they use too much ornamental foliage, or too great a variety in their permanent planting of hardy trees and shrubs, because that is impossible ; it is in their conservatories, &c., and in the plants they employ for bedding in the open air in the summer. Their in-door decorations are well arranged, and are, in many respects, worthy our imitation. The only fault appears to be, a superabundance of foliage plants. These are indispensable, particularly for lofty structures, room-decoration, &c., but in most cases more flowering plants would brighten up and render their arrangements more attractive. The plants the French use so extensively are principally palms, in great variety and quantity, musaceæ, dracenas, cycads, bromelias, ferns, aroids, pandanads, aralias, and many others ; and certainly magnificent results are produced. This taste for foliage is shared by all classes. It is very common to see little palms, cannas, dracenas, &c., as window plants ; they may be purchased in the Paris markets for such purposes, and most effective they are.

What we call in England sub-tropical gardening is far more fully developed in the Parisian gardens. It is astonishing the immense number and variety of tender plants the French employ for out-door decoration in summer, most of them remarkable for their foliage. The public parks, gardens, and avenues in the city are extensively planted with them, particularly those kept up by the municipality of the city of Paris. The Park Monceau contained by far the richest collection in Paris ; it was, in fact, a large sub-tropical garden. I will notice a few of the principal plants employed. There were several species of *Musa* (banana), viz., *M. ensata*, *rosacea*, *sinensis*, and *paradiaciaca*. Some beds contained as many as a hundred plants of the smaller species ; *Musa ensata* is by far the best—isolated plants of it have a truly noble effect. Palms were represented by groups of *Chamacrops humilis* and *excelsa*, and one large bed contained no less than sixteen large plants of the date palm. Many species of *ficus* were used, the best to my taste was *F. Cooperii*, with a distinct red mid-rib down the leaf. *F. elastica* is also good, and the one mostly cultivated. *Cedatium*, with their immense shield-like leaves, were very common, and produced a grand effect. Groups of sugar-cane and many species of *Bambusa* were graceful objects. Drac-

nas and Agaves were in large quantities. Single plants of the elephant's foot were peculiar. *Solanums*, *Wigandias*, *atalias*, *Ferdinandias*, *erythrinas*, castor oil plants, *daturas*, &c., were extensively employed. *Plumbago capensis* was in beautiful bloom, so also was *Hibiscus sinensis*. Cannas are grown in immense quantities. They are as common about Paris as zonal pelargoniums; aerea, or I may say, shrubberies of them, were planted in the Luxembourg-gardens. They, as well as the caladiums already mentioned, can be kept in winter in the same way, and as well as, the dahlia. One of the most effective and interesting plants to me was *Papyrus antiquorum*, the Egyptian paper plant; one bed of it was planted in the Park Monceau, two in the Champs Elysées, but the largest and best was in the Luxembourg-gardens. I had always seen this plant treated as a stove-aquatic, but under that treatment it never looked so healthy as in the open air in Paris. A large bed of the variegated *Duranta Buiningardii* was noticeable in the Park Monceau, its variegation being so distinctly marked. Most of these tropical and sub-tropical plants have only lately been employed, even in Paris, and now they are the principal features in their out-door decorations. In trying so many tender plants, failures will of course occur, but they are fewer than one would expect. A general fault appeared to me to exist in the grouping of too many plants of one kind together, in immense beds, mostly of an elliptical form. It is remedied, to some extent, by edging the beds with plants of dwarfer growth, and by carpeting the whole surface of many with plants of decumbent habit. This has a very good effect, as the bare soil is not exposed. A greater variety in the size and form of the beds would, I think, be an improvement in the French gardens. In England this sub-tropical movement has made considerable progress, and there is abundant evidence of a still greater development, although we have not the variety nor the quantity of rare plants at our disposal, and of course a disadvantage in climate; yet, so far as our means go, I think better taste is shown in the disposition of the plants. I visited some of the principal gardens, &c., near London, before starting for Paris, and particularly noticeable among them was the sub-tropical garden at Battersea-park, where this style of gardening originated in England. Here many points in arrangement were superior to anything I saw in Paris.

Plants with coloured foliage are extensively employed in France, such as coleus, irisine, centanreas, alternantheras, &c., but too large masses of one kind are planted together. An interesting bed of five kinds of coleus was planted in the reserved garden at the Exhibition, named *C. Verschaffeltii*, *Gibsonii*, *Marmoratus*, *Blumei*, and *Nigricans*. The first-named appeared the best. Irisine does not appear to be in very good repute in France. I saw a green variety of it in the Park Monceau. A pretty design was planted in the park surrounding the Exhibition. A group of horse-shoe-like raised beds, with grassy banks, were planted with *Teleianthera*, margined with *Gnaphalium lunatum*. Near it was *Amaranthus bicolor*, the most intensely bright-red foliage plant we have. It was most conspicuous; but I was told it did not come uniformly true from seed. Alternantheras were used to a considerable extent. *A. paronychoides* appeared to be the best at present; other and better kinds are in store for next season.

A new and very ornamental red metallic-looking beet was exhibited in the reserved garden. A larger bed of it was planted in the Jardin des Plantes, and named *Peta cicla*. It was a most striking and effective plant, and would prove a good introduction to our gardens. A bed of *Perilla argentea crispata*, in the Park Moleau, was new to me, and very attractive. *Artemisia argentea* is also a good silvery-leaved plant. Among variegated plants there was much worth notice. I saw *Antirrhinum majus*, beautifully variegated. This would prove a most useful plant for our spring gardening. *Saponaria officinalis* and *Solanum dulcamara*, nicely variegated, deserve to be associated with it. There were many other plants in this interesting class, but most of them are already known in our gardens.

Among flowering plants I must first notice the rose, the most popular of all French flowers. As raisers of new kinds, the French are unequalled, and we are indebted to them for many of the best varieties in our collections. Their climate enables them to excel in this favourite flower. Immense collections of cut-blossoms were shown at the Exhibition at the end of September, and good they were for the time of year. In forcing, and in the cultivation of roses in pots, the French own our superiority. The culture of the camellia is well understood in France, and large collections are common, and in excellent health. I noticed particularly those in the Jardin Fleuriste de la Ville de Paris, and those in the Jardin d'Acclimatation. In the management of *Artea indica*, we are decidedly in advance. The collections shown by the Messrs. Veitch were the best in the Exhibition; next to them in merit, came the collections from the Belgian growers. Ericas, New Holland plants, and stove-flowering plants are not in favour in France. I saw no good specimens of any in their collections. They have been supplanted by foliage plants. The Achemenes at the Exhibition were not good: such would never be seen at an English flower-show. A collection of seedling Gloxinias was remarkable—not particularly in colour, but in the markings of the flowers. These would prove desirable additions to our collections.

I saw very few good orchids exhibited at the time of my visit, and I was informed they had not been well represented at any of the serial shows. Collections of these peculiar and beautiful plants are not so common in France as in England. M. Linden, of Brussels, exhibited many novelties in this class. Florists' flowers generally are better cultivated in England.

In pet *Polargoniums* the French are far behind us. Zonal *polargoniums* are extensively grown, but they do not form so prominent a feature as in England. They are used in Paris in gardens chiefly, to form margins to large foliage beds, and in mixed borders. The popular English tricolor variety, "Mrs. Pollock," is sparingly used at present. A scarlet zonal *polargonium*, with double flowers, named "Triomphe de Lorraine," was exhibited at the twelfth show. This will be a great acquisition when in general cultivation. The trusses of flower last longer in beauty than the single varieties, and, from the flowers being double, no unsightly seed capsules will remain after flowering. I also noticed a novelty in the Jardin de la Ville de Paris—a latch of zonal

pelargoniums, on which were growing two trusses of different colour, one scarlet and the other pink, on the same plant. Whether this was produced by accident or by grafting I could not ascertain.

Fuchsias are used in immense quantities for out-door decoration—as margins to large beds, and for mixed beds, &c. I saw one beautiful arrangement with them in the Jardin du Roi, at Versailles. They formed a bank or frontage to a shrubbery, from six to eight feet high. In the pot cultivation of the fuchsia, judging by the collections I saw exhibited at the eleventh and twelfth shows, the French are far behind us. Carnation—especially the varieties of tree carnation—are largely and well grown in France, and are well worthy of more attention in England.

Dahlias are very extensively grown, and immense collections of cut blooms were exhibited, but far inferior in quality to those we are accustomed to see at our London flower-shows.

Gladioli were well represented at the Exhibition. Magnificent collections of cut spikes were arranged in common glass bottles of water, plunged in moist sand, and they formed one of the most brilliant features in the reserved garden. The largest and best collection of gladioli was shown by M. Sonchet, of Fontainebleau—an eminent grower and raiser of many new kinds. We, as well as the French, are quite alive to the value of this splendid autumn-flowering plant.

Lantanas are grown in great quantities, and some of the kinds possess great beauty. These do not receive much attention in England. Perennial phloxes were in great force in Parisian gardens. I observed the effect of shading on this useful border-plant. A mass, of a white variety, was flowering under a tented bed at the Exhibition, and the improvement in colour and duration of flower were remarkable. They dislike intense sunlight. In another bed there were upwards of 20 varieties of *Phlox drummondii*, some of which were exceedingly beautiful. Zinnias were magnificent: some of the flowers were as large as dahlias. These were much improved by shading. Annual asters were common, but not particularly good. Among autumn flowering-plants I may notice *Ledum palustre*. It is largely grown out-doors in Paris, and is a very useful plant. I saw also a variegated variety of it. *Anemone japonica* is used in great quantities, particularly its white variety. A bed of both was shown in the reserved garden. Immense belts of the white were planted round a large bed of shrubs in the Avenue de l'Impératrice, and I do not hesitate to say it is the most lovely and effective of all autumn flowering-plants. It is a recent introduction, and quite hardy; and the French appear to know that if the roots are cut up into pieces, each atom will produce a plant. Another plant of great merit in French gardens is *Funkia subcordata*. It has large and ornamental foliage, and beautiful white flowers. There was a bed of perennial asters at the Exhibition. From among them I selected *A. roseus*, *amellus*, *linifolius*, *bicolor*, *grandiflorus*, and *gracilis*, as desirable for autumn display.

The common ivy is very much employed for a variety of decorative purposes about Paris. It has a very neat and pretty effect. In the Tuileries-gardens, and in some of the avenues, long narrow belts of it are planted, and kept very trim and nice.

Orange-trees are very numerous in Paris, particularly in all the imperial gardens. At Versailles there is an immense collection. They are all grown as standards, about the same height, with closely and evenly cut heads, uniform in size and shape. Noble objects they are, but collectively they present a very stiff and monotonous appearance. Pomegranates are grown in the same way; and their rustic-looking and contorted trunks, neat foliage, and brilliant-scarlet flowers are very effective in summer. Neriums, white and red, single and double, are also grown in large tubs, like those employed for orange-trees. Some very fine plants I saw at the Luxembourg-gardens loaded with flowers, and most beautiful objects they were. Neriums of all sizes are to be seen in almost every street in Paris.

I had heard much praise given to the French for the arrangement of flowers in bouquets, and I visited the principal flower-markets for information on this subject. Their bouquets of choice in-door flowers are not in any way superior to those seen in Covent-garden; but their bouquets of common out-door flowers were certainly better arranged. They use more green, particularly common ferns and ornamental grasses; in making, each flower is well kept out, so as not to touch or crush those surrounding it. Each individual flower tells; they are thus able to produce a better bouquet with fewer flowers. Many of the bouquets are arranged in zones of colour—perhaps they have a white dahlia in the centre, then a ring of forget-me-not, or heliotrope, followed by a circle of red rose-buds or asters, then by mignonette, and so on; they arrange their colours well, and thus make beautiful bouquets with the commonest flowers. They use many flowers of a more open and feathery nature, such as gypsophylas, stevias, &c. These give much grace and elegance to their bouquets, particularly when finished off with ferns and ornamental grasses. Lovely bunches of rose-buds, forget-me-not, carnations, mignonette, &c., were well-arranged. The French grow better mignonette than we do, or they have a better variety. It has larger and denser spikes, of a more bronzy colour. There was a fine collection of bouquets exhibited at the twelfth show, but I failed to see anything particularly noticeable in any of them. A large collection of ornamental grasses was also shown, and very elegant and beautiful some of them were. These should be more generally cultivated in England. An immense trade is done in everlasting flowers (*Gnaphalium*) in Paris, with which they make the immortelles. I paid a Sunday visit to the cemetery of Père la Chaise, and the street leading to it presented the appearance of a large market for the sale of immortelles and other sepulchral ornaments. Most of the wreaths of everlastings were yellow, or yellow variously inlaid with black. Wreaths of common box, studded with scarlet berries, were very pretty. These the Parisians buy on their way to the cemetery, to deck the graves of departed friends. They appear to pay great respect to the dead. I had heard much of the floral and general decoration of this cemetery, but I was disappointed with it. Without going into detail, I do not consider it equal to such as Kensal-green and Highgate cemeteries.

The collections of shrubs and trees at the Exhibition were deserving of special attention; almost all the materials for permanent planting were here exhibited, and named.

Arboriculture is well understood by the French. It receives Imperial encouragement. It has its professors, and is publicly taught.

Large collections of shrubs were shown in the park at the Exhibition, and at Billancourt, an island two or three miles from the Champ-de-Mars, down the Seine. On this island the collections were very conveniently arranged for examination. In most cases the species of each genus were together, in rows. I counted no less than fifteen varieties of *Hybiscus Syriacus* and a great number of *spireas*. This genus should be more cultivated in England, both in leaf and flower; many of them possess great beauty. *S. Lindleyana* is largely planted about Paris, and its elegant pinnate foliage is very effective.

I saw a tamarix, probably *T. indica*, in the Tuileries-gardens, a striking and most lovely object. Plants of the same species stood the last severe winter in England; so it is hardy, and deserves to be grown extensively. *Euonymus japonicus* is one of the commonest shrubs about Paris; it is as much planted there as the common laurel in England.

Lilacs are grown very extensively in French gardens. I saw a splendid white lilac in flower at the 12th show at the Exhibition, a novel sight in September. I have since been informed the French force them in warts, close cellars, &c., until the flower-buds are almost ready to expand; they then gradually expose the plants to light and air; the method is similar to the way we force hyacinths.

Many and good collections of rhododendrons were shown at the Exhibition, in excellent condition.

A group of four species of tea was exhibited, *Thea Assamica*, *Bohea*, *Lesanqua* and *viridis*. They were good large shrubs, particularly the last-named.

Magnolias were magnificent; the climate of France suits them well. A group of *Magnolia grandiflora* was a great ornament to the reserved garden.

An interesting collection of *Aucubas*, numbering nearly thirty kinds was shown by a Belgian exhibitor. They bid fair to rival even the best in variety and variegation; and now the male plant has been introduced, it is not too much to expect to have them covered with large scarlet berries in our pleasure-grounds. One variety in the collection was said to produce hermaphrodite flowers.

Many and beautiful groups of hollies were exhibited. The Messrs. Veitch had a fine collection of 25 varieties of the common holly. The different forms of variegation were very striking; one French exhibitor had nearly 50 species and varieties in his collection.

Conifers were in great force, and formed perhaps the principal feature among the out-door collection in the reserved garden, as well as at Billancourt. One French exhibitor alone exhibited 45 species and varieties.

The genus *Pinus* was represented by 120 species in one collection. *Juniperus* by 60 species. The expense, &c., of conveyance prevented much foreign competition in this class.

The Messrs. Veitch, who have well upheld the standard of British horticulture throughout the Exhibition, were awarded the first prize for a group of fifty conifers for the open air; the first prize for fifty new

kinds, not yet in commerce; and a second prize for a collection of recent introduction. They had sixteen species of *Itetinospora*, many of them of great beauty. Magnificent *Araucarias* were exhibited; some in groups, but the best as isolated specimens, and noble objects some of them were. A very interesting collection of the fruits of many choice conifers was exhibited in a green state at the 12th show. Large collections of trees were shown; and it was very interesting to notice the great number of weeping varieties produced by them. This pendent habit is, indeed, being developed by most of our ornamental trees. Variegated trees were also common in the collections. A very interesting bed was exhibited in the reserved garden. Among them I noticed the oak, ash, chestnut, beech, maple, horse-chestnut, apple, cherry, &c., all distinctly variegated. The variegated *Acer negundo* is the most striking and effective of all in this class. Large beds of it were planted in the Park Monceau. In one I counted no less than 150 trees between 5 and 15 feet in height. This mass would have told better by being distributed in smaller groups, or as single specimens.

The avenues of trees which line the principal thoroughfares in Paris are a remarkable feature. The French metropolis has, in most parts, anything but a city-like appearance. By taking a stand at, or, better still, by mounting the Arc de Triomphe, the lines of trees are seen to great advantage down the various avenues that radiate from it. Great attention is paid to them, and perfect uniformity in size and shape is maintained. Horse-chestnuts are most extensively employed for the avenues; and in spring and summer they doubtless have the best effect, but in autumn, avenues of the plane tree present the best appearance, as they retain their foliage longer.

FRUIT AND VEGETABLE CULTURE.

The first thing that attracted my attention under this head was the many and peculiar forms of fruit-tree training employed by the French. Much ingenuity and cleverness are shown in many of the forms, but at least one-half of them are too fantastical, and of no use for practical purposes. They serve, however, to show how flexible the constitution of some fruit-trees is. A portion of the reserved garden is devoted to fruit-tree training, &c., and a considerable space at Billancourt is appropriated to the same purpose. Here most of the forms are to be seen; but practical results, and the relative value of each form, are best judged of by visiting gardens, nurseries, &c., where the trees have been longer established.

I shall describe most of the forms of training in treating of each fruit. The greatest liberties are taken with the pear, which is made to assume a great variety of shapes. I will first notice some that are adapted for walls and espaliers. One very ornamental form took my attention. A perpendicular rod was carried from the base to the top of the wall, at the bottom of which two horizontals were given off oppositely, forming, of course, right-angles with the perpendicular. These primary branches gave off successions of rods, trained obliquely, at an angle of 45 degs., filling up the tree, and giving it a rectangular outline. Various modified fan-shapes were common, and the same may be said of horizontals.

In one case, instead of forming a horizontal-trained tree, as we do in England, two perpendiculars were carried to the top of the wall, each giving off horizontal rods on one side only: by this method, no doubt, trees are formed at a quicker rate. Pear-trees, as single cordons, are common. They may be trained in an erect, oblique, or horizontal position. For covering a wall quickly, the erect and oblique cordons are well adapted; for fruitfulness, the oblique and horizontal forms are to be recommended. In some cases a little further development was allowed, and two, three, or even more cordons were allowed on each tree. In the fruit-garden at the Exhibition I saw a capital and very ornamental hedge formed by oblique cordons. A row was planted, the trees being exactly equidistant, and trained at an angle of 45 degs. in one direction; between each tree others were planted, and trained just the reverse way, diagonally across them, forming a number of diamonds. The extremity of each cordon was inarched on the one next to it, forming a continuous line on the top of the hedge. This form is, I think, admissible into our gardens, even independent of its fruit. It is adapted either for the apple or the pear, and, when well-established, is almost self-supporting.

Among pear-trees for the open garden, some were trained as standards of various heights, and their heads made to assume the form of vases, goblets, &c. By far the most useful and productive in this class were the dwarf pyramids. There were many exhibited; and they are very common in most of the suburban gardens round Paris, and should be more extensively cultivated in Britain. They are very fruitful, and come quickly into bearing, and are admirably adapted for small gardens. For dwarf pyramids, and all other forms grown under restricted development, the quince should be employed as a stock for the pear, as it throws less vigour into the system. It is necessary to pay great attention to root-pruning, &c., to check over-luxuriant growth, which is inimical to fruitfulness. The apple is not subject to such training as the pear, but it is made to assume many of its forms in France; in the form of little dwarf cordons, it is frequently employed as an edging to kitchen gardens, &c. It has a very pleasing and novel appearance, and should certainly be introduced into our gardens. When in flower, it must have a very pretty effect. The fruit garden at the Exhibition is margined with it. It is formed by fixing a galvanised wire a foot or fifteen inches from and parallel with the ground. The simple cordons are planted six or eight feet apart, and the rods are brought down and tied to the wire. The rod of one extends itself until it reaches the one next to it, on which it is inarched. Its extension is then complete, and the cordons form collectively one continuous uninterrupted line. The apple does not make such a nice pyramidal form as the pear; its growth is more in a bush, and as such it should be grown extensively in this country. The French employ the *Doucin* stock for all their miniature forms of cultivating the apple. In Britain, the *Paradise* stock is used, and is equal, if not superior, to the *Doucin*. The peach is well managed in France. I saw more evidence of good peach cultivation than of any other fruit. Their pruning and training differ materially from ours. Of their pruning I can say but little, as it would be necessary to see the trees in all their different stages of growth and

cessation, before it could be rightly understood. They employ more method, and classify their shoots, which must be very convenient; each is described under a name, and they know well what each shoot will produce, even when in a very rudimentary state. I visited the celebrated peach garden of M. Lepère, at Montreuil, who is considered one of the best peach growers in France. His trees were magnificent, such as I had never seen. An intelligent gardener conducted me round the walls, and I never met with a man more courteous, or more ready to impart information. I gathered from him many useful hints on the formation and management of peach trees. Among the forms of training at Montreuil, I noticed particularly the Montreuil fan—*Taille à la Montreuil*. In this form the tree is divided at the base into two equally-balanced portions. Permanent rods, *branches mère*, are developed, one on each side, and, in fully-formed trees, are fixed at an angle of about 46° . These mother-branches give off secondary rods on either side, at certain distances, generally three above, and the same number below. The two lowermost secondaries are forked, at a little distance from the parent branch. The extremities of these secondary rods are trained widely apart, as they have to form the frame and fill up the space devoted to the trees. On each side of these permanent rods, the young wood is nailed in summer, and allowed considerable development; excessive vigour is suppressed by constant pinching, &c. In winter the summer growths are pruned back to the required distances. Another form similar to the Montreuil fan is the *espalier carré*, which is better adapted for lower walls. Horizontal trained trees were common, in different forms. One form was similar to our horizontal pear trees, but of course the rods were much wider apart, to admit of the young wood being laid in, in summer.

The lyre-shape, *piéches en lyre*, is another extremely ornamental form. Two stems are carried to the top of the wall, but not quite perpendicular; they are trained up so as to form a lyre-shaped space between them, each stem giving off opposite horizontals. A magnificent tree in this shape was shown in the fruit garden at the Exhibition, and was certainly the best trained tree in the garden.

The chandelier form, *taille en candelabre*, is common at Montreuil, and is very ornamental; so also are others trained in the forms of a simple U and double U. Some trees were made to assume extraordinary shapes. One inscribed the name NAPOLEON, in immense capitals. In another place the wall was heightened considerably; eight trees were planted, and collectively trained to write the owner's name, LEPERE, surrounded by a crown and a great deal of flourishing. This was the most conspicuous object in the garden. The outline of each letter was perfect, and could be easily distinguished at a great distance. By another group of trees, the name EGGESIE was faultlessly worked out. All these peculiar forms of training serve to show how tractable the peach is under skilful cultivation and management. The whole of the trees were producing splendid crops of very fine fruit. The winter nailing of the peach tree in France, when fully formed, is a matter of little trouble. To maintain the permanent rods in their position, is almost all that is required. In this country it is necessary to spend a great deal of time

in straightening and nailing in the quantity of young wood from which we mostly get our fruit. At Montrenil many hundred acres are covered with white-walled gardens, most of them devoted to the peach. The walls are all from 7 to 9 feet high, and mostly face east and west. These aspects are considered the most suitable. All the trees are allowed great lateral expansion. To say I saw no mis-managed trees at Montrenil, would be untrue. There are many; but the peach-garden of M. Lepere is perfection. The wall-coping employed for protecting the trees is simple and effectual. A number of wooden supports are fixed to the walls at the top, and project about 1½ or 2 feet, inclining at an angle of about 30 degs. On these are laid narrow thatched straw hurdles, which can easily be put off or on, as circumstances may require. The soil at Montrenil appears to be a calcareous friable loam. Some single diagonal cordon peach trees were shown at the Exhibition; and in a little nursery-garden, at the end of the Avenue de l'Imperatrice, I saw a good collection of both diagonal and perpendicular cordons. They were trained on a well-contrived arrangement of galvanised wires, fastened on walls. In some cases two or three cordons were allowed to each tree. They had a very neat and novel effect, particularly the diagonals. Under this method many kinds may be grown in a little space. They cover a wall quickly, and are, no doubt, early productive. The fruit under this cordon system is grown on spurs. The young growths are kept closely suppressed by frequent pinching during spring and summer. Altogether, their management is very simple; and if these cordons would suit open-air culture in Britain, their introduction would be a great boon, especially for small gardens.

Plum, cherry, and apricot trees were exhibited under various forms of training, but I saw none to equal our ordinary fan-shapes. At Billancourt a little miniature fruit-garden was formed for trees trained as spiral cordons. A number of galvanised spiral wires were fastened in an erect position: apricots, peaches, and cherries were planted. The whole of them had a very dejected appearance, and I do not believe such contorted forms are of any practical use whatever. To make the rods follow the spiral wires, they were bandaged to them with strips of black cloth, or some such material. I may add, I saw at the same place some little spirally-trained cordon apple-trees in pots, about two feet high, producing a few very indifferent fruits. In another part of the island of Billancourt a very interesting collection of stocks, on which to graft the various kinds of fruit-trees, was exhibited.

The vine is, of course, extensively cultivated in France, and the beautiful vineyards present an appearance unknown in England. The vines are mostly tied up to stout stakes, and stopped at an average height of four or five feet. A large collection of the different varieties of the vine in the Jardin d'Acclimatation were trained on wire trellises. The rows were in pairs, two feet apart, and spaces of about three and a-half feet were allowed between each pair, the surface of the ground being carefully mulched. Mulching does not appear to be sufficiently attended to in the vineyards. The fruit which is produced nearly close to the ground becomes spattered and greatly discoloured. This could be prevented, to some extent, by some system of mulching; but,

probably, the vineyards are too extensive for such an operation. The vine is not always confined to one stool. In a vineyard I examined at Meudon, near Paris, branches were layered from a parent stool, and made to form others round it without being detached.

The pine-apple appears to be well cultivated in France. Some very fine fruits were shown at the Exhibition, of the "Smooth Cayenne" and "Charlotte Rothschild," in an immature state, without being detached from the plant. One house in the reserved garden was devoted to a collection of pine-apple plants, but I saw no evidence of better cultivation in France than in England. The French use smaller pots, and peaty soil.

A very large and interesting collection of strawberry plants was exhibited by a French grower, in the fruit-garden at the Exhibition. Almost every variety in cultivation, even the newest English kinds, were represented. At least half the varieties were English. To add to the interest of the collection, several original species of *Fragaria* were shown with them, from which the different races of strawberries have been produced. The exhibitor was M. Gloede, who is well known to English fragaricians. He has lately raised a variety which he calls the "Perpetual Pine." If this variety should be the means of prolonging the strawberry season, it will be a great acquisition. It is at least a step in the right direction. Baskets of beautiful red Alpine strawberries were common in the Paris markets.

As my visit was in autumn, I had no chance of seeing the French systems of forcing; but I was informed by an intelligent English gardener, who is living in France, that they are far behind us in the forcing of all kinds of fruit, particularly the grape.

The immense collection of fruit shown this autumn at the Exhibition gives a good idea of the general character and quality of it throughout France. Pears are very numerous, some exhibitors showing several hundred varieties in their collections. They are much larger and more highly coloured than we see them in England; but, of course, this is the natural result of climatic influence.

Apples were less numerous than pears. These also were large, and many of them beautifully coloured. Many varieties were under different names to those by which they are known in British gardens. The labelling, in most cases, was not at all creditable; in some cases, particularly, the names of the back-rows of fruit were quite unintelligible. The exhibitor's name and locality, &c., were often not to be found. This was altogether very inconvenient for persons desirous of examining the collections.

Grapes were in great force; one collection alone numbered 400 varieties, but quantity was its only recommendation; not one of the bunches would be considered worth exhibiting at an English show. The best grapes by far were those from Mr. Knight, an English gardener, living in France. He is, in a very public manner, showing the French the superiority of the English system of grape-growing under glass. It was amusing to see the admiration and astonishment of the French public as they came to Mr. Knight's collection. It is a pity no collections of English-grown grapes were exhibited to show still further how immeasurably behind the French are in forcing and in-door grape-growing.

Vegetable culture is well understood in France, and the Paris markets are abundantly supplied with all kinds of vegetables of excellent quality. The market gardens in the immediate neighbourhood of Paris are well managed, and yield good crops; but those a little further out are not in such good order. Much ground appears to be wasted, and good cultivation is not always apparent. The French systems of cropping are quite different to the English, and many kinds of vegetables that we seldom see grown are cultivated in France in great abundance.

I visited the large central market (*Halles Centrales*) in Paris several times, and there a just estimate of the quality of French vegetables may be made. The market itself covers an immense area. A series of pavilions is erected, the roofs being supported with iron columns. Below are cellars, in which the people stow away their articles to keep them fresh. In walking through the market, it is noticeable what an enormous quantity of vegetables are grown for salads, lettuce and endive particularly. Chicory and dandelions are also much grown. Good salad may always be had at all, even the commonest, restaurants in Paris. Kidney or haricot beans are very extensively cultivated. They are eaten in a green state, pod and all, as we have them in England, and also are shelled and eaten like green peas, or preserved for winter use. Globe artichokes are very common; they are used both in a green state and cooked. Cardoons are also largely grown. Celery is well cultivated, mostly in beds, five or six feet wide. It grows to a large size, but is not particularly well blanched. Cauliflower was remarkably fine, as were all other vegetables of the cabbage tribe. Asparagus was not in season, but the French are said to excel us greatly in the cultivation of this excellent. Sorrel appears to be grown as extensively as spinach is in England. Lentils were also in great abundance. Tomatoes were magnificent, and far superior in size and colour to English-grown. The fruit of the egg-plant (*aubergines*), were peculiar, and common in the markets. Leeks are grown in enormous quantities; no garden is without them, and in many they form the principal crop. The French are said to be as much before us in the forcing of vegetables, particularly those used for salads, as we are before them in the forcing of fruit. A great trade is done in common ferns in the Paris markets. Small bundles of fronds of the common brake and male ferns, are sold for bouquets, for decorating fruiterers' windows, and dessert-tables at most of the restaurants. The fruit has a far more beautiful, refreshing, and tempting appearance when set on the young, fresh, green fern fronds. It first took my attention in Rouen, by a little basket of red Alpine strawberries. The fruit was set on fronds of the common brake, and the tips of the fronds were left peeping out round the margin of the basket. Such a use of ferns, which are very common in this country, would greatly improve our arrangements of fruit, and add a charm to them not to be realised unless seen.

HORTICULTURAL IMPLEMENTS AND APPLIANCES.

These are not so well represented at the Exhibition as one would expect. There are some, however, worthy of notice. French garden cutlery differs considerably from English. The ordinary pruning-knives have more hooked and beak-like blades, which may be very well

adapted for pruning stout branches, but they cannot be so convenient for small wood or spur pruning as those with straight blades. Many peculiar forms of grafting and budding knives were exhibited. A very useful little saw, made to shut up like a knife, is used by French pruners, and is particularly well adapted for cutting out those branches of wall-trees that are too large for a pruning-knife. By far the most useful pruning instrument the French have is the *scateur*; it is even more used in France than the knife. It can be had of all sizes, the smaller of which can easily be carried in the pocket. Pruning is far more expeditiously done with this instrument than with the knife, and it should certainly be in the hands of every English gardener. Other, larger instruments, made on a similar principle to the *scateur*, are used for lopping larger branches. French spades all have straight handles, without an eye. The scythes have also straight handles, with broad and stout blades. These would be awkward in the hands of an English workman, but the French dig and mow well. I saw a capital step-ladder, of very simple construction, at the Exhibition. It is made of ash, and consists of two ladder-like parts, united at top with a common iron pin, which acts as a hinge, on which they swing. Those about 10 or 12 ft. high are the handiest. In these the ladder sides are round, about two inches in diameter, and each pair stands 2 ft. 9 in. apart at bottom, narrowing to about 9 in. apart at top. One of the two parts narrows still more at the top, so that it may fit within the sides of the other. The iron pin is then run through the four sides. The staves are half-rounds, tapering somewhat to the ends. The flat sides are of course upwards. This step-ladder may be shut up and used as a common ladder, or the pin may be drawn out, and each part used in the same way. As a step-ladder it can be stood out at any distance, and ascended or descended on either side. I saw it used in the Tuileries-gardens; workmen were on it, pruning the standard orange trees with the *scateur*. I also saw it in use in the imperial kitchen-garden at Versailles, for gathering apples and pears from the tall pyramidal trees, and it is admirably adapted for all such purposes. It stands firmly, and is easily carried. An iron step-ladder, constructed like the one I have described, was shown at the Exhibition, but it did not stand so steadily, and was not so easily carried about. Boxes or tubs, for the orange and other large plants or trees, were shown. It is rarely we see these well constructed in England. Some had square sides, one side of which was made to open on hinges, like a door. In another, two sides could be opened; these were fastened by iron bars. The roots, soil, drainage, &c., could easily be examined in them, without being disturbed. Other forms were round, and more tub-shaped, and these were the most ornamental. One in this design had two hinges placed on one side, diametrically opposite, to which the two equal sides were fastened by an iron pin, driven from the top downwards; by taking out the pin, the two halves could be opened back. The root, &c., in this case could be easily examined. Another modified form of this had the rim margined round a considerable width with ornamental bronze or ironwork. This gave it a beautiful finish; but the roots, &c., in this design could not be examined without lifting the plant out, or taking the tub to pieces.

Seats and chairs are in great abundance in all out-door frequented places in Paris. Many beautiful specimens, in endless designs, were shown at the Exhibition. They were manufactured in iron, wood, or wire, or in these materials variously combined. One form of chair is especially worthy of notice. It is the one used in all the public gardens, parks, avenues, &c., in Paris. It consists of a convex seat, formed of thin strips of steel, radiating from a circular, central portion of the same material. This seat is as easy and elastic as the softest cushion. The convex back is made on exactly the same principle. It is light, durable, and elegant, and will bear any weather; and from the seat being convex it is always dry. They are all painted of a creamy colour. It is certainly the most comfortable chair I ever sat in, and its wholesale introduction into this country would be appreciated. Arm-chairs are made on the same principle. In Paris, two sons is usually charged for a sitting. Very good portable garden-seats, for holding three or four persons, are common in all the public promenades in Paris. Each set of legs, the under and back supports, are cast in rustic ironwork, all in one piece, and made to represent birch or oak, both of which are capitally imitated. On two of these supporting-frames, boards are fixed to form the seat and back; few or many boards may be used, according to their width.

A very neat, durable, and effective edging is employed in the public gardens, &c., about Paris, as margins to lawns, &c. It consists of bent cast-iron rods, semicircular in form, made to imitate birch, oak, or hazel, and very natural-looking they are. In thickness the rods vary from a quarter to three-quarters of an inch, having a span of from 12 to 16 in. They are pointed at each end, to be more readily fixed in the ground. In arranging an edging, nearly one-half of each bent rod is placed within the span of the one before it; and where the two cross each other a tie is made with a string of small wire. The height of these edgings, when fixed, varies from 6 in. to 9 in. The idea is not new; such an edging may sometimes be seen in English cottage-gardens, made with hazel-rods. Although not a foot high, it serves as a gentle hint, in a pleasant form, sufficient at least to prevent Parisians from walking on the grass. I think its use is desirable in our public gardens. Many other patterns of edging were shown at the Exhibition, but none were so simple, so effective, or so largely employed, as the one I have described. The French have a capital contrivance for watering their roads, lawns, &c. A number of 6 ft. lengths of iron piping, about 1½ in. in diameter, are joined together, by 1 ft. lengths of strong leather hose. The whole is elevated about 6 in. from the ground by little cross-wood or iron frames, under which are fixed two little broad iron wheels, which are so fixed as to turn any way. A support and a pair of wheels are placed at both ends of each length of iron piping. By the flexibility of the leather portion, and the easy running wheels, immense lengths may be easily moved about in any direction. A man stands at the extremity of the hose, and is able to throw water to a great distance, and to spread it as evenly and as effectually as a gentle shower. Stop-cocks are, of course, placed at convenient distances, on which the hose is fixed. It is astonishing what a distance a man may sprinkle in a few hours. When the hose is not in use, the iron lengths can be brought round on each other, the whole forming a compact bundle, which a workman may conveniently place on his shoulder

and carry away. There is no dust seen in Paris, nor any mud. Such a capital system of watering is well worth imitating. In the sweeping, cleaning, and the general management of roads, &c., the French are far superior to the English. The French have a very simple and effectual way of tying the trees, that form the avenues, in their proper position. A stout stake is fixed firmly into the soil, close to the tree. A number of little straw bundles, two or three inches long, are closely packed round the stem, where the tie is to be made. Over these a single piece of copper wire is placed, and the stem is drawn up to the stake, at the back of which the wire is fastened by a pair of pincers. In such a method of tying there can be no rubbing between the stem and its support, and the wire is prevented from cutting. Ornamental circular iron gratings are fixed round the stem of many trees in the public avenues in Paris, to protect the roots, and to make it convenient for watering.

Galvanised wire is most extensively employed in France for a variety of horticultural purposes. Treilises are made of it, on which to train espalier and cordon fruit-trees; and it is probably the best, neatest, and most durable material for the purpose. Much ingenuity is shown in fixing and tightening the wires. A method of wiring garden-walls is common in France, by which means fruit-trees are tied at a little distance from, instead of being nailed close to, the bare walls. This system has been recommended for adoption in England, but it has many drawbacks and few advantages. It is not so well adapted for English modes of training, particularly our fan-shaped trees, which are so different to the French.

The construction of useful plant and forcing-houses is not so well understood in France as in England. The conservatories, &c., shown at the Exhibition were mostly large, and possessed of considerable architectural beauty. They were built of iron, and in most cases had span curvilinear roofs. More attention was paid to their general ornamental appearance than to their adaptability for successful plant culture. Means of ventilation were not so convenient as in houses of English construction. Wooden houses are not in favour in France; iron is preferred. French forcing-houses are, as a rule, far inferior to those common in British gardens.

It is a pity no glass structures of English manufacture were exhibited. In France, hot-water pipes are usually made of copper. For shading their plant-houses, the French generally employ rolls of thin lath, about three or four feet wide, and painted green; each lath is about an inch in width; they are fastened rather loosely, one to the other, by pairs of little wire staples, linked together, a space of about a quarter of an inch being allowed between each lath. These shades are rolled up and down, by ropes and pulleys, similar to those used for English blinds. They are very liable to get out of repair, and altogether they have a very heavy and cumbersome appearance; much time is occupied in letting them up and down. Iron two-light boxes were exhibited. These may be more durable for imbedding in fermenting material for winter forcing, &c., but for general purposes they are not superior to the ordinary wooden ones. The hand-lights used in England for protecting early vegetables, &c., are represented in France by very large, cheap, belt-shaped glasses, made of

coarse strong material, and they are well-adapted for the purposes to which they are applied. A very useful kind of grafting mastic was shown at the Exhibition. It is in good repute, and very much employed by the French, who are perhaps unequalled as grafters, budders, and general propagators. The mastic is of the consistency of paste, and can be used cold, a great advantage, as it is always ready for use. It is not affected by any vicissitudes of weather, and soon becomes perfectly hard and firm after its application. It is also valuable for protecting pruning cuts, &c., from the action of the atmosphere. I think, if it were introduced into this country, it might prove a good substitute for clay, which is so liable to crack. It is very cheap. The inventor is M. L'Homme Lefort, of Belleville, near Paris.

Before concluding my report I cannot help alluding to a few collections of artificial plants and flowers in the Exhibition. They were so like nature as not to be readily distinguishable from it. Entire plants of dracænas, caladiums, particularly *C. Belleymeri*; the delicate markings of its leaves were faultlessly imitated. Many orchids, whole plants, in pots and baskets, and the very soil that cultivators use, were exactly represented. Among orchids I observed *Lycaste Skinnerii*, *Vanda carulea*, several *oncidiums*, *angræcums*, *Stanhopeas*, &c. The maidenhair and other ferns were lovely. Plants and leaves of the variegated foliaged begonias were perfect. Trellises covered with honeysuckles, convolvulus, and the beautiful *Cissus discolor*, could not be surpassed by nature or art. Every habit and peculiarity of each plant was exactly copied and portrayed.

MECHANICAL ENGINEERING.

BY JOHN EVANS,

ENGINEER.

IN accordance with your wishes, I have visited the French Exhibition, and several workshops in Paris, and have paid particular attention to some matters connected with my own branch of industry, namely, mechanical engineering. I have laboured under some difficulty in not thoroughly understanding your requirements, and therefore hope you will excuse any shortcomings on that account. I am also quite unused to the business of writing reports, so trust that a plain statement, compiled from notes taken during two visits to Paris, will be accepted as my contribution to your collection of facts.

I arrived in Paris on a Sunday, and the first thing which I noticed was the work going on in many public places. I hope this will never be introduced into England. I feel sure that if a workman does justice to his employers during six days of the week, he will be doing an injustice to himself by working on the seventh. I believe there are other and higher grounds for my objection to the system of Sunday labour, but prefer to rest it upon the one I have stated. I think that, looked at solely from a material point of view, England has been an immense gainer by the habit of resting thoroughly on one day in seven; for this reason, I should view with great alarm any attempt to introduce the continental system of making Sunday a day of amusement. I am of opinion that, working as we are proud to do here, very hard the greater part of the week, what we want on Sunday is not so much amusement as rest.

That which next struck me was the leisurely way in which all the French workmen, whom I saw at work, got through their business. They did not appear to me, either when employed in my line or any other, to be doing so much work in a given time as a number of Englishmen in their place would have been expected to do. The men in the streets laying down pavements; stonemasons at work on public buildings; engineers in their workshops; in fact, all kinds of workmen appeared to me to be dawdling over their tasks in such a manner that, as a conscientious foreman, if I had had the overlooking of such men in England, I should have been compelled to discharge them. I would much rather not say this, for it is anything but pleasant to say so much against men who have received one kindly, and the French workmen did receive me very kindly wherever I went with your excellent interpreter, M. Fouché;

but I wish to speak without favour or prejudice in this report. There was, then, in my opinion, a want of cheerfulness about the French while at work. As far as my somewhat extensive experience goes, it is just the reverse with my own countrymen; the English mechanic is sometimes inclined to be dull outside the factory, but while at work he is usually in good spirits; in the French workshops, I fancied the men seemed sad and solemn, as if their work was a punishment, and not a pleasure; but outside the factory, in the street or café—I think the café by-the-by much better than our public-house—the French seem merrier, and, to all appearance, enjoy themselves more than the English. If my observations on this point are correct, it would seem that the English workmen have the advantage over the French, for working hours are more than the hours for relaxation, therefore those men are best off who take the greatest interest in, and enjoy their lives most while at work.

The hours of labour appear to be longer among the French than with us. A working week in the iron trades is sixty-six hours, and the pay seems to average from 4s. to 4s. 6d. per day, which, considering the high prices of things in Paris,—coals, rent, and meat being dearer, bread about the same as with us—leaves the workman in Paris considerably worse off than his London brother. They do not appear to have any trades' unions in France, yet they have a great many disputes between the employers and the employed. The Courts of Prud'hommes seem to work well on the whole, but the men are very much dissatisfied with their arrangement, which always ensures the chairman and vice-chairman of the council being employers; they say that since the Emperor appoints these functionaries, the vote always goes against the workman in a dispute, for working Prud'hommes are unanimous on their side, and the employer Prud'hommes on theirs, and the chairman then gives the casting vote; I believe, however, that on the whole the system is found to answer; but it is by no means sure that a similar system would serve in England. The French, as a rule, seem to have more respect for authority than the English (I mean in small matters); when something has been decided against a man's full conviction, and he feels sure that he and not his opponent is in the right, I believe in France the decision of the authorities would be accepted with respect, and held to be final and binding; but among English workmen, an injustice is held to be an injustice, as well after as before a decision has been given; and I am of opinion that if any council had, by the chairman's casting vote, given a verdict which a number of men believed to be an unfair one, the whole matter in dispute would have to be reopened before a peaceful settlement could be arrived at.

Referring to the Exhibition, I was somewhat disappointed to find very few new things in the English department of machinery. I am quite sure we could have made a better show in this respect if we had wished to; nevertheless, for finish and sound workmanship, I saw nothing to surpass the British display. Take, for example, the tools of the Whitworth Company; nothing could excel their exactness and design. To the eye of a mechanic, these tools appear to be perfection itself; the lathes and small tools were not only faultless to the eye, but it was apparent that they were made for work as well as show; where

strength was wanted, it was present; where it was not required, there were no unsightly lumps of metal to show that the pattern-maker and designer did not understand their business. The Americans are the only foreigners who approach us in this respect. I found amongst all the other nations, including the French, the machinery was of a heavy build, with much waste of metal, and evidence of want of skill in design. The French have such a great name for good designing, that I was the more struck by this fact. In machinery, the French are far behind the English draughtsmen. Concerning the want of novelty among the English engineering, I have been informed that it may be partly accounted for by the disinclination which is felt by many of our firms to show their newest arrangements. When an Englishman invents anything, he seldom patents it out of England.

There is a class of men who are always on the watch for a successful English invention; it is sent abroad the moment it appears; and is not unfrequently re-imported to this country as a foreign discovery. The English patent law, being a very complicated one in its general operation, is rendered still more so in action by this cause, and an inventor has before now found himself, not only robbed of his invention, but ruined in defending himself in an action for an infringement of somebody else's right in his own invention. Added to this special reluctance to expose a new contrivance to all the world, I think I may add, without fear of contradiction, that very many men of eminence in my business have lost faith in Exhibitions altogether; they do not approve of them, and if they are compelled, from various causes, to exhibit at all, they send the least, instead of the most; which they feel will suffice to keep their name before the public.

I noticed a tendency, on the part of many English exhibitors, to show every part of the articles sent for exhibition. The visitor was not left to wonder what sort of work was inside such things; for instance, all the ordnance specimens were shown in section. This did not occur to me as being the case with any but English work.

Before visiting Paris I had heard much of French and Belgian locomotives, and their cheapness and superiority over ours, but I have not the slightest hesitation, after having carefully looked at all the specimens of this class of work which I could find in the French, Prussian, and Belgian courts of the Exhibition, in saying that the best foreign locomotives were but bad copies of English originals; the fitting was less exact, and there was more patching and hiding up of indifferent work than would be allowed in an English locomotive shop. Our own railway engines were admirable specimens of careful and sound work, but with nothing new about them, in fact the Stephenson was filled with pumps instead of an injector; rather an old-fashioned arrangement in an engine built for exhibition in 1857.

The stationary engines were many of them exceedingly compact, and of neat construction; but I did not observe anything in the way of novelty, if I except two rotary engines, the one by Thomson, of Edinburgh, and the other by Hill, of Newport, Monmouthshire. I am afraid the latter uses too much steam to become of general use. The former I did not see at work, but from the drawings, and explanations from the

man in charge, I am inclined to think the great desideratum—namely, reduced friction in direct-acting engines—has been very nearly attained.

The Americans come next to the English in mechanical work of all descriptions. Owing, I suppose, to the high price of labour in the United States, there is a noticeable want of finish about their machinery; but, to atone for this, they seem to excel us in boldness of design and originality of contrivance. I saw many very useful inventions and clever combinations in the American department. There is not that tendency to reproduce discarded English arrangements and patterns that one notices in some of the other machine departments.

Darling, Browne, and Sharpe seem to be the Whitworths of America, if one is to judge by the very fine specimens of machine-tools which this firm shows. I noticed among their exhibits a very ingenious universal milling-machine, for doing all sorts of work, such as fluting taps, drills, and cutters.

Sellers, of Philadelphia, has also very good work. An automatic gear-cutter, for wheels of all sizes, up to 5ft. in diameter, is a very admirable piece of machinery.

As may be supposed, the Americans have some good wood-working-machines: but the most striking thing in this line is a dovetailing and mortising-machine, invented by a person named Armstrong, but made by an English firm in Rochdale. For simplicity and efficiency, I think this machine was never equalled,—two circular-saws, set at different angles, suffice for the whole of the operation of cutting out both pins and pinholes at the end of a board with lightning-like rapidity and never-failing exactness. This machine seems, to my mind, to represent the difference between the American and the English inventor. In our country we seldom go back to first principles in inventing—we cling to some parts of the old arrangements; if a motion has been circular, we endeavour to supply a better circular motion; if horizontal, we try to get better results by superior horizontal arrangements, but seldom think of throwing all that has been done on one side. The American, on the other hand, seems to look at two things,—the means at his command and the end to be attained; he seldom troubles his head with the law or the opinions of others. Before dismissing the American element from this report, I should like to call your attention to a very admirable little apparatus in use on American railways, to increase the safety of passengers, or, at all events, to lessen the bad results of accidents. It is a small box, called a "sound signal-apparatus," which every guard in America carries in his pocket. If an accident should occur, the telegraph wires have simply to be cut, and this signalling-apparatus joined on to the ends, when messages can be sent to any station and received by the guard, who reads the signals by the ear, and not the eye. My reason for mentioning this here is that I believe your influential Society would be conferring a boon on the public by inducing the railway authorities of this country to adopt this useful and inexpensive apparatus. It is exhibited by W. Bond and Son, of Boston, U.S.

In the Swiss court I noticed some small tools, very well finished, and much cheaper than we could produce them in this country. H. Pech and Faure, Brothers, have the best collection of these. I believe the

workmen in Switzerland get even less money than they do in France. This would account for the lowness of the price at which some of the goods in this court are marked. It is certain we could not compete with the Swiss in watch or clockmaking tools; whether we can in clocks and watches I am unable to say.

I happened to be present at the trial of safes in the building of the grounds of the Exhibition. I consider the result of that trial as typical of the outcry which has been raised against British manufacture. The American safe was the longest in being opened, but the English was incomparably the best safe. The foreigners who heard of the trial, left out the fact that means were taken which no burglar could use to open the English safe, and that no such means were taken to open the American, and confined themselves to the statement that the English safe had been broken into twenty minutes before the other one, which made it appear that the English were nowhere in safe-making. This, in my humble opinion, is just what has been done in many other lines: some exceptional case has been seized upon, and facts drawn from that, and made to apply generally to serve a purpose; in other cases, merely from the love of sometimes starting or keeping up an alarm.

It was suggested to me that I should say something about the amusements of the French workmen, and I made some inquiry upon the subject. I found that the most usual amusement was dancing; and I can only say, that if the kind of dancing which I saw at two or three places where I went to, is that usually resorted to for the purpose of amusement (and I was told that it was), then the less I say about it in this place the better; the conduct of both men and women was simply disgusting.

The general bearing and behaviour of the French workmen in the streets and cafés struck me as being very much superior to that of our own men. I did not see a blow struck or a person drunk during my stay in Paris: and I hear from Englishmen, who have lived there for years, that both these forms of misbehaviour are extremely rare. This would be a good thing for the English workman to try and imitate. There seem to me to be no roughs in Paris. I was present at the Emperor's fête. I was perfectly astonished to see the largest crowd I have ever been in so orderly and quiet; there was no pushing or shouting or any kind of annoyance offered to anybody; but all conducted themselves like rational beings, bent on enjoying the sight they had come out to see. In summing up my experience of Paris I would remark that, as far as I was able to judge, there are many things which we might with advantage learn from the French, but still I cannot join with those who see nothing but what is admirable abroad, and underestimate the advantages we enjoy at home. On the contrary, I think the French have very much to learn of us; and until they have learnt some of these things, the British workmen will remain as they now undoubtedly are, much better off than their brethren on the other side of the Channel.

In conclusion, I desire to thank you for the honour you have done me by selecting me as one of your reporters.

MECHANICAL ENGINEERING.

By WILLIAM LEARMOUTH,

ENGINEER.

I LEFT London on the 6th of September, and arrived in Paris on the following day. I only remained in Paris ten days, as I was sent for, and only visited one engineering establishment, and that on the morning of my departure for London. It was that of M. Petean, Rue du Ranelagh, Paris, and if it was to be taken as a fair sample of the workshops of France, England would have nothing to fear from competition in that direction. But I am afraid that it must not be so taken, for the machinery, &c., exhibited by Schneider and Co., of Creusot, was a complete exhibition in itself, and worthy of the greatest attention.

This establishment is in the arrondissement of Autun, in the department of Saône-et-Loire, about 24½ miles from Paris, and occupies an area of 135 acres, of which one-sixth part are buildings. A special railway, of six miles in length, is used to bring the goods to a canal, which communicates with the river Saône and the river Loire; 16 locomotives are constantly employed, half of which are of the weight of 29 tons, and half of 21 tons. This establishment has, besides its engineering departments, its own iron and coal mines, blast furnaces, forges, &c., and they manufacture their own iron to the extent of 240,000 tons per annum. The number of men and boys employed there amounts to nearly 10,000, and they are distributed as follows:—Forges, 3,500; iron mines, 650; collieries, 1,450; puddling, 750; engineers, 2,250; railway, &c., 850; shop at Chalon, 500.

The shop at Chalon is a little distance from the works at Creusot; the principal work done there is bridges, roofs, &c. There are in constant use 170 steam-engines, with a total power of 9,750 horses. They manufacture every description of machinery, including marine, locomotive,* and stationary engines. Amongst the bridges made by them was one of the length of 1,087ft.; width, 168ft.; weight, 3,000 tons. The population of the town is 23,872, nearly all of whom are connected with the works. The wages vary from 1fr. to 4frs.; the smiths receive 4frs. and the engineers 4frs. 50c. per day. The establishment is not in high favour with the Parisian workmen, who, I understand, designate it as the "Refuge for the destitute." Be that as it may, the workmanship was of a very superior character.

* The locomotives average 100 annually.

Within the Exhibition there was, in my opinion, nothing to compare with the machine tools by Sharp, Stewart, and Co., Whitworth, and Shepherd, Hill, and Co.; but there were several very good engines by French makers, especially those by Falcot and Sons, and by M. Fland; there was also a very good locomotive for the Calcutta and Delhi railway, made in Wurtemberg. The American engine exhibited in the park is what I would call an exhibition engine, that is, got up for the occasion, and contrasts strongly with one by Kitson, of Leeds. Amongst the brickmaking machinery, the English seemed to be the best, although there was a very great variety as regards the different modes of construction. M. Henri Voelter's patent wood-pulp machine, for papermaking, seemed to answer exceedingly well.

As regards the social habits of the French people, or rather those of the Parisians, through my inability to speak French I had to get my information from Englishmen, some of whom had resided in Paris for seventeen years; it would appear that both men and women go out to work, and if their employment is at a distance from each other, they have usually an appointed place of meeting, whence they proceed to some place of amusement, after which, they return to their domicile—for you can scarcely call it a home—where all they require is a bed, a table, and two chairs, as they live entirely out of doors. If they have children, they are sent out to nurse, at about two or three francs per week each. But children are seldom to be met with in Paris, and when you do see any they resemble miniature men and women more than children.

THE CONDITION AND HABITS OF THE FRENCH WORKING CLASSES.

SPECIAL REPORT,

By ROBERT CONINGSBY.

I BEG to hand you my report on the condition of the French working classes. In accordance with your instructions I have visited a number of the homes, workshops, places of amusement, &c., of the mechanics of France, and noted facts which appeared to me to have relation to the subject of your inquiries.

Exercising the discretion your Council was good enough to allow me, I extended the area of my observation beyond Paris and its environs, by journeying to the following centres of manufacturing industry, viz. Lyons, St. Etienne, Chalons-sur-Saone, and Creusot in the department of Saone-et-Loire. The following remarks are, moreover, based upon an experience of French life gained during a year's residence in different parts of Paris and its suburbs, and a few short stays in several important provincial towns. Bearing in mind your suggestion, I have not sought for information from the generally recognised authorities, so perhaps you will kindly pardon any errors into which I may have been unconsciously led. I have endeavoured, as far as possible, to steer clear of extreme statements, to avoid all matters of a political or religious nature which would be likely to give offence to any section of our good neighbours, and generally to confine myself to the task of preparing a homely picture of the skilled labourer in France. For the sake of convenience I have divided the subject into chapters, as follows:—

CHAP. I.

THE FRENCH WORKMAN'S CHILDHOOD.

French people in humble circumstances are more economical than the poor in England. They show this in a variety of ways. To take the young ouvrier from his birth, it may be first remarked that his entry into the world is attended with less expense than it is considered proper to incur at the birth of a mechanic's child in England. The "sage femme" is substituted for the more costly doctor, and the kindness of neighbours dispenses with the necessity for the hired services of a woman to attend to the family of the patient. The French are alto-

gether more neighbourly than the English, and, in cases of sickness or distress of any kind, regard those living near them in the light of friends and relations. Again, French mothers do not think it necessary to provide for their little ones expensive outfits, consisting of articles beyond their means and condition in life. Everything is prepared for use, but nothing for mere show. In England much money is wasted upon young children, which, if saved or properly expended, would spare much after-suffering. I have known cases where infants, beginning life in ostrich plumes and ermine-trimmed cloak, have been afterwards kept from school because their parents could not buy them boots to go in. But it is not at his birth alone that the young *ouvrier* is more rationally treated than his English brother; during the whole period of his childhood he is, as a rule, better and yet less expensively clothed. The wife of a French mechanic, who should venture to attire her child in the mountebank costume in which too many English children are disguised on Sundays, would be deservedly laughed at for her pains. Although the climate of France requires less guarding against than ours does, poor French children are not sent out into the streets dressed in frocks which begin at the arm-pits and leave off above the knees; neither are gandy bows of pink ribbon regarded as equivalents for sleeves. I say poor children, because they are the only ones with whom I have just now to deal. The wealthy classes in France do not seem to be so careful in this matter. It would be well, however, for all who are anxious to imitate the follies of the rich in this as in other things, to bear in mind the fact that they have not the same means at command to obtain the remedies which are at the service of those above them.

The public *crèche* in France is an institution, which would, I think, be very beneficial to our poorest class, but would not find much favour among English mechanics. Where the woman is looked upon almost as much in the light of a bread-winner as the man, as is the case among the French, the importance of a provision for taking charge of her children during the day cannot be overrated. I have visited some of these *crèches*, and greatly admired the scrupulous cleanliness and kindly forethought which are apparent throughout. Patient and attentive nurses are provided for the very young, and all kinds of interesting toys and games for those who are old enough to understand them. Our workhouse officials might perhaps borrow from some of the arrangements at these excellent nurseries.

In the matter of diet, I think the young *ouvrier* is more fortunate than the English boy. It seems to me that weak wine, soups, and thoroughly-cooked food are better calculated to build up the human frame gradually and naturally than are the more solid meats and drinks which are given to children in this country. The French lad—partly, perhaps, from climatic influence, but, as I think, chiefly from the better regulation of his digestion—is altogether a more light-hearted and gladsome creature than his playfellow in England. Even in the lowest class, the "*gamin*" of the *chiffonnier* does not present the sad and weakened appearance of the London street Arab.

From all I have seen of the French school system, it does not impress me favourably. I think there is too much discipline. Boys are treated

with a severity which would press heavily on men, and are not trusted as the pupils are by successful English schoolmasters. The plan of setting one boy to watch another, either in or out of school, is, I think, a bad one, and at most French schools this is largely resorted to. From the time when a lad leaves his house in the morning until he returns at four or five in the afternoon, he is liable to be reported by some ever-wakeful monitor. The probability is that one lives in his neighbourhood, and will report him if he does not walk properly to his studies; while, to secure his good behaviour on his way home again, he is marched in a dreary file along the streets, under the supervision of another monitor. He carries his dinner in a basket of a regulation pattern, and is duly monitored while despatching its wholesome contents. Even in the playground the eternal monitor is in attendance, apparently to see that the gravel is not unduly kicked about, or the somersaults turned the wrong way. No offence against discipline is ever left unpunished, and the unbending regularity of the system speedily makes the boy feel that he is but a part of a great scholastic machine.

The French national school seems well adapted for educating young soldiers, but scarcely so well for turning out good citizens. That individuality upon which Englishmen pride themselves, and which renders such good national service here, must be much injured by the training which young French lads receive.

I think, however, that in one matter, at least, connected with schools we might borrow from the French with advantage. In France it is not permitted, as it is here, for any man to set up a school, however poor his qualifications for teaching may be. Before a person can commence business as a schoolmaster, he must give some proofs of his good character and ability. A notice of his intention has to be exposed in some public place in his locality for two or three months before a pupil can be received, so that if anybody has anything to say against him his license may be refused.

The chief difference in the nature of the instruction given in French and English national schools seems to be in drawing, history, and calisthenics. The French boy, upon leaving school to enter the workshop, knows more of all these things than the English boy does. As regards the first, he has mastered at least the rudiments of both free-hand and mechanical drawing; and concerning the second, he can tell you of the glorious battles in which the arms of France have been victorious; of the discoveries of her savants, and the generous ideas she has given to the world. He has been, in short, designedly led to a belief in the high destiny of his race and country, and is convinced that it is the mission of Frenchmen to regenerate the world. I cannot help thinking that in the present day we neglect these lessons for our children too much. In the first place, drawing is seldom taught at all, and as for history, the most that we do is to bore our school lads with a dry summary of the names and deeds of the sovereigns of England, and the dates of their births, deaths, and coronations. Respecting the third study, almost every French school has some sort of gymnasium attached to it, and at stated hours the boys receive proper instruction in the use of its fittings.

The greatest event in French child-life is the "first communion," which is looked forward to for many weary years as the grand festival of boyhood's existence. The occasion is, as the name implies, that upon which the young are received into the bosom of the Roman Catholic Church as communicants. For months beforehand the cheap tailors of the neighbourhood have displayed before the longing eyes of the young *ouvrier* their most modish "first communion suits." And during the same period the women of the family have been engaged upon the preparation of white dresses for the girls. On the great day itself the young gentleman, who has never before been seen in anything but a blue blouse, appears in all the glory of a black cloth jacket and white cambric tie. A satin band, culminating in a bow, with tassels of silver lace, is fastened round the left arm; and boots, of the shiniest Spanish leather, are heard to creak as the happy wearer walks up and down before his home for the examination of loving eyes. During the service a procession is formed, the girls carrying bouquets, and wearing veils reaching nearly to the feet; and altogether there are few prettier sights in the world than a "first communion" in France.

Before a lad can be taken into the service of an employer, he must procure from the authorities of his locality a certificate, containing an account of his birth, parentage, and giving general facts concerning himself and his family. This is deposited with the master, and is retained during the time of the lad's service, and is given up, with an endorsement stating the reasons for the separation, when he leaves. This must be kept all his life; no French workman out of employment must be without it, or he is liable to be arrested by the police.

The age at which children are considered old enough to be taken into factories seems to be lower in France than here. I was under the impression, until I had visited some of the workshops in Lyons and its neighbourhood, that the French people were more merciful to their little ones than we are; but, from what I saw in the south, I am convinced that this is not the case. I have been in all the principal manufacturing districts of my own country, and witnessed the sorrowful spectacle of boys and girls, who should have had several more years of play, hurrying to their work on cold, dark mornings, with careworn faces and stooping figures; but for a sight which is most calculated to move a man of ordinary sensibility to compassion, one must go into the neighbourhood of the French silk factories, and watch the melancholy procession of babies (they can be called nothing else) dragging their little limbs slowly away from the places where their tiny energies have been tortured out of them. I was informed that in France, as in England, there are regulations concerning this sin, but that, more especially in the case of small manufacturers, the law is systematically evaded. This false economy—to take the lowest view of this sad state of things—should be apparent to a nation so logical as our neighbours. To deprive a country of its future labourers for the sake of such small present gains, is, to say the least, a most unbusinesslike proceeding.

While treating of the young, it may not be out of place to turn to a brighter picture, and compliment our friends upon the excellent provisions they have made for the recreation of children of all classes, in

their public gardens, which abound in every quarter of their great cities. In London, the enclosures of our public squares are kept for the privileged few whose parents live in the surrounding houses; a poor boy being driven away by the subscription beadle, as if he were a mad dog or a leper. In Paris, the right of the *ouvrier's* child to a peep at the flowers and a romp in pleasant places, is fully recognised, and held as sacred as that of the young prince. The consequence of this trust and kindness is just what might be expected—the little fellows in blue behave with all the propriety of their more fortunate brothers who are born in the purple.

If the Society of Arts, to whom the public is already indebted for so many good works, could obtain the opening of some of the metropolitan enclosures to these embryo servants of manufactures and commerce, the children of London, they would earn the thanks of the community and help to raise the standard of behaviour in the class benefited.

Concerning the general conduct of the rising generation in France, it may be safely affirmed that it is such as is calculated to put Young England to the blush. I speak of boys and girls, "young ladies and gentlemen" of course conducting themselves properly everywhere. If one stops the roughest-looking lad in the poorest quarter of Paris to make an inquiry, the chances are ten to one that the cap is raised and the utmost civility shown in the reply to one's question. The most ignorant of French parents impresses upon his child the value of civility, and the necessity of avoiding those little acts of rudeness which help to make life unpleasant. Every Frenchman, from the senator to the rag-picker, prides himself upon being *gentil*. It is needless to say that this word has no relation to the English word "genteel."

The military tastes of the people are very apparent by their effects upon French children. The little fellow just able to walk drags his toy cannon after him, and shoulders his tin sword with the air of a grim warrior, while his elder brother, aged seven, reviews his legions in the bye-streets of the town, and marches at the head of a troop of urchins of his own age, each carrying a fifty-centime musket. Every bazaar is full of toy weapons and military paraphernalia. The enthusiastic parents sometimes dress their children in the glaring costume of the *zouaves*. In short, the general surroundings of a French juvenile are calculated to imbue him with the notion that fighting in uniform is the grand end and aim of human existence.

CHAPTER II.

THE YOUNG FRENCH WORKMAN.

There are in France three large technical educational establishments, supported by Government, where, upon payment of a sum equal to about £80 English, and with the necessary recommendation from certain local officials, lads of sixteen are admitted, and boarded and lodged for three years. At these colleges of labour the young French workmen are carefully and scientifically trained, with the view to qualify them for holding the position of foremen in manufacturing establishments. The first principles and laws of chemistry and mechanics are thoroughly taught,

and full opportunities afforded the students to make themselves practically acquainted with their application. From all I have been able to gather of the working of these institutions, I think them productive of unimixed good, both to individuals and the nation. It is notorious to all who are acquainted with our factory system, that English foremen are deficient in that theoretical knowledge which alone can ensure economy in human effort. Our mechanics are perhaps superior, in physical strength, perseverance, and correctness of manipulation, to the mechanics of any nation in the world; but the want of system in the utilization of this splendid human material is outrageous. A boy is taken from school and placed in a workshop to learn a trade, positively without any provision being made for his proper instruction. It is nobody's business to teach him, and the whole history of his apprenticeship is a story of a game at hap-hazard. Sometimes any increase in his knowledge is looked upon with jealousy by the journeymen, and regarded with alarm by the foreman, who is conscious of his own mediocrity. In the execution of work, all attempts to obtain results by a more direct method than some time-honoured one in vogue in that particular workshop, are derided and opposed. Thus if a lad is ever so much attached to his art, there is no help for him from without, and he has to maintain an unequal struggle during the years of his minority, to find, when he becomes a free agent, that the science of his business has been altogether ignored by those who have gone before him. In some of our more eminent English firms, the principals have partially carried out—each for himself—the designs of the promoters of the French system. Inducements have been offered, and assistance given, to young men of superior intelligence and skill, to educate themselves above their fellows. As soon as proofs of efficiency have been given they have been made foremen, in the place of the time-keepers and time-servers who too often held the positions before. The effect has been good, but if Government would do, on a grand scale, that which has been found to answer so well on a small one, there would be this great advantage—the dignity of mechanical labour would receive a national recognition, and a superior class of men would devote themselves to the work of officering our magnificent manufacturing army. A mechanical career is as boundless, and offers as much scope for a legitimate ambition, as the profession of arms or the study of the law: then why not provide for the thorough and systematic training of those who desire to enter upon such a career?

The great majority of young French workmen of course acquire their technical knowledge as ours do, in the workshop, the rank and file being content in France, as here, with just as much knowledge as will suffice to obtain them a livelihood, regarding their art as a servant to their necessities, rather than as a mistress to be wooed and adored. The duration of an apprenticeship is usually five years, instead of seven, as with us. Night schools abound, in which drawing and mathematics are taught, and instruction given in other branches of education. There are also in Paris several free night libraries, where young men may go and read, in warmth and comfort. The Parisians are extremely well-off in this matter of public libraries. There are the collections of St. Geneviève, with 150,000 volumes; the Arsenal, with 200,000; the Mazarin, 150,000; the

Hotel de Ville, 65,000; and the Sorbonne, 80,000; and these are in addition to the magnificent Imperial Library, which contains 1,100,000 books. But with all these advantages, the young French workman is not very studiously inclined. He is passionately fond of dancing and billiards, spending almost every evening either at a café or a ball. Now, concerning the latter place of amusement, there is one thing which must be protested against, viz., that indecent mode of dancing known as the "caneau." There is no fear of this disgraceful impropriety ever being practised by English workmen; but as it is possible that these lines may find their way into France, I would respectfully inform the members of the French working class, that by all their English friends—and we wish to remain ever their warmest friends—this particular practice of theirs is regarded with unfeigned abhorrence. It is unworthy both of them and the age we live in. It is an undignified rôle to be for ever playing the exception to the rule, that "a want of decency is a want of sense." In justice, however, to the ouvriers, it should be mentioned that the "caneau" is not so popular among them as it is among the students and clerks of the great French towns.

The café where our young workman smokes his pipe and drinks black coffee with sugar and brandy (generally termed "a gloria"), is an institution as creditable to our neighbours, and as much in advance of anything which we can show in that way, as the modern license in dancing is discreditable. The cafés "Parisien" and "Delta," in Paris, and "Lyonnais" and "de l'Empereur" in Lyons, are perhaps the grandest working-class coffee-houses in the world. They are noble buildings on the outside, and their interiors are glittering with gold and gorgeous decorations. The tired ouvrier, who is willing to spend a few sous in refreshments, may seat himself on cushions of crimson velvet, and, while sipping his wine or coffee, contemplate at his ease the lively scene which is passing before him. Groups of orderly pleasure-takers are everywhere around. In the centre of the room are billiard-tables, surrounded by the players; on the opposite side, men with their wives and children playing at dominoes, and on this several quiet card-parties. The sprightly garçons hurry to and fro, carrying wonderful piles of beer glasses and bottles of "ordinaire;" the light streams down from enormous chandeliers, and is reflected in a hundred plate-glass panels. The ceilings are painted to represent cloud scenery, and the walls decorated with fruit and flowers. Elegant vases and graceful statuary fill up every nook; and at the end of the room, on an elevated throne, sits the presiding goddess of this fairy scene, the calmest, most majestic, and self-possessed lady in the world, the "dame de comptoir." The poorest artificer feels, while gazing upon all this splendour, that he has a share in the good things which his toil creates. A close acquaintance with such scenes must help to civilise a man; and it would be good for our workmen were all the public-houses in England abolished, and their places supplied by grand and commodious cafés, such as I have feebly endeavoured to picture.

The young French mechanic is also fond of the theatre, which in France appears to be better managed than with us. There is no pushing and fighting outside the doors for priority of entry; every man

falls into a rank as he arrives, and those who come first are first admitted. As a rule, the prices of seats are lower than in England, and the cheap parts of the house much more commodious. There is a system of having hired applauders, who are paid by the actors, which is not known among English audiences; but this is partly counteracted by the fact that the public insist upon the right—which is too often waived here—of expressing their disapprobation when they dislike either a piece or the acting of any particular actor or actress. The people in the galleries and amphitheatre of a French "house" are much more orderly than in an English one. There are none of those unseemly interruptions and fights which disgrace the English "gods."

In addition to the theatres, there are, as with us, numerous music-halls, or, as they are called, "*cafés-chantants*," and "*cafés-concerts*." Here, again, if we except the unfortunate prevalence of "*double-entendre*," I am of opinion that we are surpassed. Perhaps in the case of places like the "*Oxford*" and "*Canterbury*" music-halls, where operatic selections are very creditably given, and decidedly at Evans's in Covent-garden, we may be said to hold our own; but the cheap singing-rooms of London do not approach the places of entertainment of a similar class in Paris. The drinks consumed at the latter are, as might be expected, of a milder nature than the beer and spirits which are retailed in the London concert-rooms. Coffee, either hot or cold, in glasses, weak claret-punch, and beer, are the chief items of "consummation" at a *café chantant* or concert in France.

There are other amusements of a musical nature which are patronised by young French workmen. I allude to the numerous societies which exist for the practice of both vocal and instrumental music. Foremost among these excellent associations is the "*Union Orpheoniste*," the origin of which was singular, and deserves to be related as an instance of the great results which are sometimes obtained from the labours of an individual. A certain Monsieur Eustache, an organist, some years ago came to the determination to found a gigantic harmonic society, which should have branches throughout the whole of France. Strapping a knapsack to his back, he set out upon his mission, and never rested until he had visited every town of importance in the empire. His mode of operation was extremely simple. Upon arriving at a place he called upon the mayor, or some other official personage, and solicited his aid and patronage. This was seldom refused, and the energetic musician at once proceeded to form the nucleus of a singing-class, which done, he resumed his pilgrim's staff and wallet, and started for another town. After many years of this hard work, M. Eustache had the pleasure of seeing his idea become embodied in a great national association. The Orpheonistes now number some hundreds of thousands; and on Sundays and fête days the members of the different district-societies march out with richly embroidered flags and banners, and halting in some public garden, they regale the ears of the crowd who have followed them with songs and choruses.

The young French workman is liable to the conscription; and words cannot convey to Englishmen a sense of the heavy burden of this liability. Once a year the drawing takes place, when all the men who are over

eighteen years old, who have not drawn, must present themselves at the office of the Mayor, or some other properly appointed official, that their liberty for the next seven years may be deliberately "raffled." I use a word which will make the transaction plain to English mechanics. A certain number of men is required from the district, to fill up vacancies in, or to augment the strength of, the army, and so those who draw the lowest numbers have to become soldiers, while the rest, having drawn once, are free from military service ever after. When a young man has obtained a "good number," he receives a certificate from the "returning officer," to the effect that he is no longer liable to the conscription, and there is much rejoicing in his family over the event. This certificate is signed in the book mentioned in Chapter I., which must be deposited with the employer. There are some exemptions to this liability to the conscription, such as in the case of a son who is the support of a widowed mother, but they are very few. If a lad absconds before he has drawn, he is liable to be arrested at any time to the end of his life, and punished as a deserter from the army; in addition to this, the parents are held responsible for the production of their children upon the day when the lot is to be drawn, and the consequences are very serious to them, if they cannot find a very satisfactory explanation of the causes, in cases where their sons are absent. Filial affection being decidedly stronger in France than in England, this is found to be a very practical check upon would-be deserters.

The scene at one of these annual drawings is painful in the extreme. Mothers and sweethearts stand round the doors of the bureau, wringing their hands and weeping, as now and again some young fellow steps out with a blank look on his face, which shows that he has drawn a low number; while a little further off, anxious-looking groups of men, who are no less interested in the fate of the lads within, stand smoking and chatting together, gloomily. The behaviour of the unfortunate youths themselves, who have got bad numbers, is just what may be expected of men of their age and nation. They bear their evil fortune bravely; some indeed look forward with real pleasure to a life of adventure; while others, who see in the piece of paper they held in their hand, the death-warrant of all their hopes and expectations, hide their grief beneath a forced but manly smile, and accept their fate without a murmur.

When the day of parting comes, the young conscripts troop away in a crowd around their sergeant; their friends follow them through the neighbourhood, shaking hands and embracing, and amidst shouts and weeping, songs, witticisms, and swooning women, the gallant defenders of France take their farewell of home. They go to the north and the south, to Cochin China, Algiers, and "elsewhere."

There are many clubs for the purpose of providing the funds for the exemption money, in the case of members who are drawn; but they are not popular among the spirited youth of France. The price of a substitute (which the Government finds by calling for one more man in some other district!) varies with the exigencies of the military service. It generally exceeds £80. At the beginning of the present year, owing to the expectations of war between France and Prussia, the exemp-

tion money rose some ten or twelve pounds, and numbers of poor people who had managed to save the amount, as fixed before, were compelled to see their sons depart for want of the few extra pounds. I remember one sad case of this sort, where a very poor woman indeed had, unknown to anybody, hoarded up the price, as she thought, of her child's liberty. He was drawn, and the poor creature rushed frantically about the neighbourhood to try and borrow the money which was wanting; but, not being very popular, she could find nobody to assist her and the young man had to go.

Without entering upon the wider question of how a large standing army affects a people, it will, perhaps, be the place here to point out a way in which the conscription presses especially upon their manufacturing skill. The system of forced military service affects not only the men withdrawn from the ranks of labour, but the expectation of it influences the youth of a country during the time they are learning their business. There is an element of uncertainty introduced which recurs to the mind with each fresh difficulty which presents itself, and the one great incentive to perseverance—the thought, "I must conquer in this art, for my whole life will be expended in it"—is wanting, and its place supplied by the reflection that, "After all, I may never have occasion to follow this business." The result of this reasoning in the case of the average apprentice would be to make him content himself with a second instead of first-rate knowledge of his trade. It would appear as if this view of the effects of the conscription was shared by some of the great French employers, for many of them are in the habit of advancing the exemption-money to skilful and well-conducted young men in their service, under an agreement to be repaid by instalments deducted from future wages. M. Schneider, the principal proprietor of the extensive iron-works at Creusot, has several men who are paying back the money thus kindly advanced to them. I need not point out to English workmen the great advantage they have over their continental brethren in this matter; the fact that men beginning life gladly contract a debt of nearly a hundred pounds to be freed from this forced military service is, to my mind, a very eloquent one. There is another way in which I think the French military system injures the people, and more especially the working classes. The morality of a country is lowered by it. At the end of five years' service the young soldier is at liberty to return to his home, and serve the remaining two years of his term in the army of reserve. During these two years he is not allowed (under ordinary circumstances) to marry. Camp and barrack life being notoriously conducive to immorality, we have, under these arrangements, a constant supply of military vices introduced among civilians by men who are just at an age when their pernicious example is most dangerous to the younger members of the community. These returned soldiers being looked up to with respect by those of their own age, but more especially by their juniors, as men who have seen the world. I believe it is chiefly owing to this constant influx of the military element into civilian life that we find the deplorable state of things which exists in France, where among the artisan class it is quite common for young men and women to live together in concubinage. In England

we have, I believe, one class alone, which has many members guilty of this folly and wickedness—viz., the street-hawkers of our large towns; among mechanics in England such a thing is virtually unknown.

Male friendships are much more common among the French work-people than our own. In our middle and upper classes, life-long attachments between men, who perhaps first met at school or college, are the rule; but, from some cause or other, they are quite the exception among English mechanics. This sometimes causes the conduct of young French workmen, who are in the habit of vowing eternal fidelity to each other upon every festive occasion, to appear ridiculous and unseemly. One of your reporters—who may perhaps have recorded the fact—was horrified, while in Paris, to see one man kiss another. Now as a matter of taste, one may very properly object to so demonstrative a mode of exhibiting affection for one's male friends, although it is the English, and not the French, who are the innovators in the matter; but I think the cultivation of just a little more warmth of feeling between man and man in the workshops of England would be an excellent thing. I would, in short, protest against that coldness and reserve which condemns hundreds of thousands of worthy men to live and die in the world without ever having experienced the sensation of real friendship. Acquaintance-ship is a good thing, but it is no substitute for friendship. To outward appearance the two may look alike, just as a bar of iron resembles one of steel; but when they receive a blow, the latter gives out a true, clear ring—the former is nearly silent.

It is a very common practice in France, as it is in Germany, for the young workman who is just out of his time to travel through the country, working at different places on his route. He usually belongs to some trade society, which has a house of call in every important town, where he is entitled to lodging; and the members of his brotherhood must, if they can, find him employment.

While on his journey, which lasts sometimes a couple of years, he has an allowance for each kilometre he walks, amounting to something like a halfpenny a mile, which provides him with refreshment on the way. Following this custom has, I believe, a tendency to make continental workmen more intelligent than they would be if, as with us, only those who stayed in the place where they were brought up were considered steady and reputable mechanics. The difference between a German *handwerksbursche* or a French craftsman-voyageur and an English "tramp" is very wide indeed.

The young *ouvrier* differs from the English workman in nothing more than in his mode of courting. As a rule, he expects to receive money with his wife, and the amount of "dot" which the young lady is to receive, and the extent of her outfit, are matters which he discusses very early indeed with her friends. He has been, from a boy, more provident than the young Briton, and, consequently, generally has a little money by him to begin the world with. As a rule, the French marry later in life than we, and such a thing as two young people commencing life upon nothing, and beginning housekeeping in furnished lodgings, as many of our mechanics and their wives do in England, is unheard of. While paying his addresses, the young *ouvrier* has not so many opportunities afforded

him for studying the character of his future wife as the English lover expects to enjoy. It would be considered an impropriety for the young people to be left alone in each other's society under any circumstances; consequently, there are none of those delightful pre-marriage rambles in which young love so much delights in England. In France, young men walk together, and young women go out in twos and threes, and there is much ogling and flirting between the members of the different groups as they pass and repass one another. But of that wholesome sweet-hearting, which has a tendency to refine the man and elevate the woman, and is as distinct a phase of British existence as bachelorhood or the matrimonial state, there is literally none.

When all the preliminaries are settled, and the day is fixed for the wedding, circulars are sent by the bride to her friends, and the bridegroom to his, informing them of the fact, and asking them to "attend the nuptial benediction" at the church. This summons to attend a wedding is honoured by the most punctilious employer. A clearer case for a holiday cannot possibly be made out by a French mechanic than the production of one of these circulars. The bride and her friends proceed to the church by one route, and the groom and his party by another, as it would be considered, as in our upper middle classes, an impropriety for the lady to be driven in a *fiacre* with a gentleman who was not her husband. After service, however, the whole party proceed together to some café, where "*noces*" are celebrated, and they spend the day in festivities. In the evening they generally adjourn to a public ball, where (the bride having taken care to invite some elderly ladies to chaperone her young friends) the dancing is kept up until the place closes. Such is a brief sketch of the life of the bachelor-ouvrier.

CHAPTER III.

THE OUVRIER MARRIED AND SETTLED.

The home of the French workman is not, according to English notions, a comfortable one. Men earning from six to eight francs per day are content to live with their families in rooms which would be despised by an unskilled labourer in England. There is one piece of furniture, however, which the poorest people in France appear to pride themselves upon possessing, of good and substantial quality, namely, a bed. A mechanic in France will expend from ten to fifteen pounds upon this article. The *ouvrier* does not very often make appointments to be kept at his home, generally preferring to meet his friends at some café or restaurant in the neighbourhood: too often, the entire family eat, drink, and sleep in the same apartment. To be candid, I have not been favourably impressed by the married *ouvrier*. The French character does not seem to appear to so much advantage in the matrimonial as in the single state. The *garçon-ouvrier* is a gay and chivalrous creature, who is accessible and generous to his friends, and courteous to women. The married man is a subdued, and too often sordid individual, whom I have once actually seen seated in a cart smoking his pipe, while his wife was between the shafts drawing him. The way in which married women work in France, is one of the first things which strikes an Englishman as

being peculiar. As a rule, the workman expects his wife to do something, in addition to taking care of his children, which shall bring in money. She is considered eligible for the performance of all sorts of duties which are here confined to men. In the north I have seen women yoked together like horses, towing barges along a canal; while men, presumably their husbands, have been comfortably smoking on deck. On the occasion on which I saw the woman in the shafts of a cart, although it was in the Champs Elysées, and broad day-light at the time, nobody appeared to take notice of the fact, or to regard it as being in any way odd. This wide employment of the wives of workmen may account for the fact that the home of an average mechanic in France exhibits an amount of discomfort which would render an English housewife thoroughly miserable. Perhaps it is because the streets and *cités* are so magnificent, that the poorer classes of the French take so little pride in their houses; but, from whatever cause it results, as an impartial chronicler, I am bound to state that indoors the French workman dare not challenge comparison with his equal here. I have, in the course of this inquiry, visited between twenty and thirty places inhabited by the families of the working men, and although in some I have seen something approaching to English notions of comfort and cleanliness, I have generally found them in disorder, and unclean.

I will endeavour to describe one which I saw in Lyons, which I select because there was nothing particular to distinguish it from others I know. I have been received in better French workmen's homes, and also in worse.

Following a friend, I crossed a large square court-yard, in the centre of which was a beautiful flower-bed and a fountain, which, however, was not playing. Turning under one doorway, out of about a dozen which led from the yard, we ascended some seventy or eighty stone stairs, then passed out on to a balcony, came to a door, knocked, and were bidden to enter. It was about seven in the evening, and the family had just sat down to dinner. If it were possible for a Frenchman to be embarrassed, which it is not, I think our host would have been so upon that occasion, for, without the slightest notice of our coming, he was suddenly intruded upon by two people, only one of whom he knew, and there and then informed, in the directest manner, that an Englishman, who was looking up facts for a public report, had come to see him and his family eat. With true French politeness, both madame and monsieur immediately insisted upon the fact that my visit gave them the greatest pleasure, and as I could not properly describe a dinner which I had not tasted, declared that the only terms upon which they would let me out again, were that I should sit down and dine with them, which I accordingly did. We commenced with bouillon, which, as madame was obliging enough to inform me, had come from a shop round the corner, where it was kept ready-made, and cost four sous the demi-litre (about an English pint). It was not so strong as turtle soup, but exceedingly palatable. The French take their soup thin. Before cutting the fresh loaf, which was of monstrous size, our host piously made the sign of the cross on it with his knife, in pursuance of a custom which is invariably followed by the working classes in France. After the potage we had a mutton ragoût, which the

hostess had herself cooked, and which, in accordance with an agreement then made, I hereby pronounce to have been excellent, and in this verdict the three younger branches of the family apparently agreed, for they finished plateful after plateful in a manner which did the air of Lyons infinite credit. As a third and last course, we had some fried potatoes, which I believe had also come ready-cooked from the shop where the bouillon was sold. In honour of my visit each adult was then served with a small glass of liqueur, and there remained then only the little cup of black coffee to be drunk to terminate our dinner. Wine was taken *ad libitum* by everybody, including the children, who, however, added water to theirs; and, although it was quite equal to that which is served at two francs per bottle in second-rate Parisian cafés, it had only cost this frugal family about 2fd. a quart!

The room in which we were was uncarpeted. The floor was of the usual black-board description, intended for the greasing with beeswax process, instead of the scrubbing-brush. The deal table at which we sat was uncovered, and bore the traces of many dinners which had gone before. Everybody cut from the common loaf with his dinner knife, which had been previously freely used in the triple capacity of knife, fork, and spoon; and the heads of the family seemed to labour under some peculiar hallucination as to the proper place to cleanse their fingers, after picking the bones of the ragoût—our host patronising his blouse, and our hostess using her mouth as a finger-glass. The furniture of the room was not remarkable either for elegance or quantity. A large chest of drawers and a kind of wardrobe, a crucifix, two pictures (one of St. Agnes, and the other of the first Napoleon), seven or eight chairs, and a clock, which, from the dust collected about it, must have been a long time quiescent, would have been all that the most observant sheriff's officer from Middlesex would have been able to catalogue of the chattels in that chamber. There was another room, with which a doorway without a door communicated, where the usual substantial, heavy-looking mahogany bedstead was partly visible. The walls had once had a paper of some ornamental pattern upon them, but there was almost as much plaster visible as paper, at the time of my visit. A fire of wood embers was smouldering in a basket-grate on the capacious hearth, and the pots and pans, in which our dinner, and the dinners of other days, had been cooked, were grouped in picturesque confusion on the floor. Altogether it must be admitted that the neatness and cosiness of most decent English people's homes were sadly wanting in that dwelling between the Saône and Rhone. The head of that family was, I believe, as fair a specimen of the average family ouvrier as could be found; he was reputed to be worth a few thousand francs, was not particularly niggardly or in any way an exceptional working-man. The French, as a rule, do not take that pride in the fireside which an Englishman does. In England some of the working-classes go altogether to the opposite extreme. Men earning but five and thirty shillings per week must have their reception-room, their tiny decanters, and miniature sideboards, a painfully clean Kidderminster carpet, six books with gilt edges, placed in apple-pie order, on a rickety little lee-table, and a one pound fifteen shilling chimney-glass, and expect all who would

see these pretty things to give a very genteel double-knock at their "hall" door. These trumperies, and the constant efforts made to appear in easy circumstances, keep thousands of our mechanics penniless, and land them, at the approach of the first calamity, in the direst distress. The French, if they neglect appearances at home too much, are seldom without the means to buy anything which they may become persuaded they require; they are an economical people, who believe that to-morrow will require to be provided for as well as to-day. There is one peculiarity about the saving Frenchman—he will not trust his money in a bank. He will hoard until he has enough to invest in a house or a piece of ground, a Mexican loan, or an Isthmus of Suez Canal Company, but he will not allow anybody else to merely mind his money for him; he can do that himself.

On Sundays and fête-days the family man among the working classes takes his wife and little ones to some public garden or building, where the children enjoy themselves immensely, and the day is brought to a close by a dinner at some restaurant where the prices are moderate, or even by a visit to a café-concert, or theatre. The married workman does not, as a rule, visit cafés on week-days, he would find them too expensive.

The work going on in Paris on Sunday is one of the most unpleasant features in French life. The advocates for the Sunday opening of museums and picture-galleries in this country would do well to take warning from what is to be seen across the Channel, where every year sees the fall of some barrier between the poor man and his Sunday rest. It is all very well to plead for the refinement of the people, but in a country like ours, where competition is so strong, and people are so eager to make money, everything which has a tendency to make Sunday more like one of the other days of the week helps to bring on the time when capitalists will discover that it is against the laws of political economy to keep mills empty and machinery standing idle during one whole seventh of the week. At present the good and sufficient answer of the workman, and the one which appeals to the self-interest of the employer, is this, "We rest on the seventh day, and are therefore more workable on the other six." As for the rest which is obtained by exploring museums and studying pictures, I am quite certain that an employer would get more work on Monday out of a man who had passed the day before in the factory than from the one who had been all the Sunday instructing himself and "improving his mind,"—an occupation which most people find very tiresome.

I am opposed to the secularisation of Sunday for many reasons. In the first place, it does not appear to work well in France, where a very large number of workmen are regularly employed during seven days a week, and a still larger number only leave off on Sundays in the middle of the day. I admit that the Sunday in France is livelier than in England, and that the French working-classes appear to enjoy themselves more upon that day than the poor in England do, but, having admitted this, I do not see that it leads to the conclusion that we should be wise in imitating the French in this matter, believing as I do that the extra liveliness in our streets on week days, and the tremendous

wealth of this nation, are partly the results of the quiet way in which we spend Sunday; and finding that our way is also the way of the most powerful and successful nation in the world—the United States of America—I am inclined to think that this hard-working Anglo-Saxon race has found out what suits it best.

Although the early-closing movement has benefited the English working-classes more or less ever since the time of Edward the First, when it was ordered that mechanics should cease work at four o'clock on Saturdays, and be paid for a full day's work, the French have not yet introduced it. Saturday is no shorter than any other day to the artisan in France; he has to work 6½ hours a week, while in most trades here the tale is 56½.

In sickness or distress, the French workman is, as a rule, better provided for than the English. In the first place, he is more likely to have made provision for a time of adversity by saving money or joining some benevolent society; but if he has done neither of these things, the land is full of public and private institutions where he can be relieved. There are no end of charities where the idle and mean-spirited, as well as the unfortunate, may obtain the necessities of life for nothing. If a man requires linen or flannel for his family, he can be supplied by complying with certain routine regulations in the way of formal applications and inquiries. If he fancies he would like to borrow a few hundred francs to set up in business as a garret-master, there are kind and charitable folks who will assist him to set all the laws of political economy at defiance, by lending him the money without security or interest. If his tools are at the pawnbrokers (*mont-de-piété*), there is another charity which will redeem them for him. In the winter there are charities for keeping him warm, and in the summer it is his own fault if he is anything but cool; and all the time, he is treated as a pauper with the same respect which is shown to the independent poor. People of a class who in England would die, as some actually do, rather than accept the dole of the State charity, in France may be seen trudging home from the "Bureau de Bienfaisance" with their bundles under their arms, chattering and laughing with as little concern as if they had been out marketing. With us the pauper is too harshly treated, but in France charity seems rather overdone. The fact of a man's receiving public relief there carries with it no sort of social stigma; of course, in the case of real misfortune, it should not; but surely it lies rather with those who say they are lame to prove that they are not lazy, than with society to accept all who live upon it as immaculate. Men and women who live by charity-hunting are too often regarded as clever practitioners by the poor among whom they reside, than looked upon with the contempt they deserve. A man with whom I was once talking on this subject, remarked, that as all property was robbery, these schemers were only imitating their good friends the capitalists, by using their wits instead of their muscles; and this is a doctrine which finds great favour among numbers of French workmen.

But, however much the charities of France may have come to be abused, it is impossible not to admire the kind thoughtfulness which supplies the really needy with such an abundance of good things; it

seems almost impossible that a family could be left to starve in France, as has happened in England while I have been writing these pages.

When the family *ouvrier* is taken ill, he can enter a hospital, with the comfortable assurance that not only will he be well cared for, but during his stay kind ladies will visit his home, and see that the wife and little ones want for nothing. The knowledge of this fact must often exercise a beneficial influence on the patient.

When convalescence has taken the place of illness, there are other hospitals a little way out of town, where the cure may be completed by the aid of fresh air and generous diet.

The system of having great hospitals, where a number of diseased persons are brought together, is not altogether approved of in France. Some thirty years ago, a French Minister of State, M. Remusat, inveighed against it, in a circular of instructions issued to the provincial mayors; and it will be remembered that an eminent English physician, only the other day, brought the subject before the public in the *Times*.

Some of the rules of the French trade societies, relating to sickness, are noteworthy. For instance, in one association, a member who falls seriously ill, has several of his brother members who are out of work deputed to nurse and watch him. Night and day they relieve each other, with the regularity of sentinels. The brotherly tenderness of this provision is beyond praise, although from the difference of our habits it would not be found practicable in England.

Among the domestic arrangements which we might with benefit borrow from the married *ouvrier*, is the one by which "washing-day," with all its unpleasantness, is abolished. As a rule, the poorest people send their linen away from home to be cleansed in the suburbs of Paris. In such places as Menden and Boulogne-sur-Seine, there are whole colonies of washerwomen; the sides of the great rivers are lined with white-capped *blanchisseuses*, busy scrubbing and thumping the clothes of the million. By taking advantage of organisation and combination, it is found cheaper and better to have the things done in this way than by means of the objectionable private wash-tub. The French are too clever literally to wash their dirty linen at home.

In the morning the *ouvrier* is called in time for his work, by a woman who gets her living solely by this means. It is her business to wake people at any hour they require to get up, and the price of a call varies from one to two sous. It may be remarked here that the French appear to require less sleep than the English. Paris does not go to bed any sooner than London, but it is up at least two hours earlier in the morning. At 5 a.m. in the summer the streets are quite lively with women going out marketing; and men of business will ask you to call upon them at their offices between seven and nine in the morning.

At rising the workman drinks a basin of coffee, made with milk— which his wife usually fetches in a can from a neighbouring *crémier*, and eats a small loaf of bread. This is the only meal until eleven o'clock, and is called the little breakfast. At eleven a substantial meat breakfast, called the *déjeuner à la fourchette*, is taken, which differs in nothing but name from the meal which is called *dîner*, and is eaten at six or seven in the evening. Supper, that favourite but very unwholesome meal, is

dear to the working classes in England, is almost unknown on the Continent.

Each calling in France has its patron saint, and on the fête-day all the members make holiday, and as many as can attend a banquet, which, like most French festivities, closes with a ball in the evening. The employer and his family often attend these gatherings, and goodwill and harmony invariably reign supreme. A case of drunkenness would be almost as rare on one of these occasions as one of larceny. Some of the callings have made their fête-day a public event, as for instance, the butchers and laundresses. On Shrove Tuesday, under the auspices of the former, a procession, rather more ridiculous than our pageant of the Lord Mayor's show, winds slowly through the chief streets of Paris. This day is called *Mardi-gras* (fat Tuesday), after a fat ox, which is drawn in state; and all over the town the people go about masquerading and blowing on French horns, which are rather more disagreeable to the ears of a foreigner than the bagpipes. In the evening there are masked balls, where, I am sorry to say, indecency and folly generally reign supreme. The washerwomen also have their public procession and ball.

The first of January, and the Emperor's fête-day in August, are the two great national festivals of the year. A public fair is held in most of the principal streets, and in the evening there are illuminations and fireworks displays, which, both in taste and grandeur of scale, surpass anything of the kind ever seen in England. On the occasion of the former holiday it is the fashion to visit or make presents to one's friends. Everybody who cannot make a personal call is expected to send a card; and a special provision has been made to meet this requirement by the French post-office, which transmits a card in an open envelope for one cent.

On All Souls' Day the touching custom of visiting the graves of departed relatives, to adorn them with immortelles and other ornaments, prevails among all classes. Parents bring the toys of their dead children and leave them on the tomb; lovers plant flowers; and sons and daughters kneel in silent prayer above the hallowed remains of their parents.

CHAPTER IV.

THE OUVRIER IN THE WORKSHOP.

Judging from the specimens of French work in the Exhibition, our friends have made wonderful progress since the year 1851, when they were so infinitely inferior to us in all but a few branches of manufacture. I think there cannot be a doubt, that in all trades which have hitherto been considered as English specialities, we still hold the lead; but it is equally certain to my mind that the French are running us extremely close in some of them. As a set off to the alarmist views which have been put forth, I think we should do well to remember that people generally show to greater advantage as hosts than visitors. France is at home in 1867, and is known to have put forth her whole strength in this Exhibition, while England, in spite of the support which the government gave in money, and the public in visits to Paris, scarcely took that absorbing

interest in the late great international display, which, from the number of British exhibits, might be supposed.

The fact is, that Englishmen are becoming rather tired of what I will beg leave to call the hambug of exhibitions. There are necessarily so many shams connected with them, so much sentiment, and so little in the way of tangible result, that many of our eminent manufacturers have lately resolved to have nothing more to do with "industrial tournaments," if they can help it.

Many of the houses best known in certain English manufactures had already acted upon this resolve, and were only conspicuous in the Champ de Mars by their absence; and many others only went into the matter in a half-hearted way, finding that the space necessary for them to make a good display was not to be had. Notwithstanding these and other drawbacks, however, England, it must be admitted, made a very satisfactory show indeed. In spite of the eccentric decisions of the juries, who seemed as liable to be caught by clap-trap handiwork as uneducated people are by clap-trap oratory—any impartial person must admit that in exactness of detail and conscientious work, we English are still, on the whole, not only unsurpassed, but in advance of the whole world. Our own brothers of the West are, it is true, teaching us some things which their necessities have taught them, but as for the Latins and the Tentors, they are, notwithstanding all their progress, still but imitators in the more solid arts. In addition to the specimens of French work in the Exhibition, I had the opportunity of going over at leisure the largest manufactory in the empire. M. Schneider's iron-works at Creusot present a magnificent example of French talent for organisation and economical arrangement under the most favourable circumstances. Vast sheds are built in a valley of an oval form, where ten thousand men, women, and boys are enabled to carry on their daily labour without the least confusion or waste of force. The raw iron is run in from the surrounding mines in ballast-trains, which discharge their loads at the very furnace mouth. Twenty-six great blast-fires are kept going night and day. Foundries are next door to turning-sheds, and fitting-shops about on smithies. Everywhere throughout this vast establishment the clang of hammers and the roar of machinery is heard, in evidence of the resolute force which is being exerted; but in no corner of this town of workshops does there appear to be the least confusion or unnecessary bustle. From the head manager, who sits in his bureau with his staff of telegraph clerks presiding at their instruments in the adjoining room, ready to transmit his messages and inquiries to every corner of the works, or to communicate with the principal four hundred miles away in Paris, down to the begrimed and wretched-looking women who wheel the coal from the pit-bank, all seem to have their allotted tasks, and to go through them with the regularity of a well-finished machine. In passing through the different shops, I thought the men seemed a little less energetic at their work than so many Englishmen would have been, and I have noticed this in other factories, and been told that others have been struck by the fact that Frenchmen do not seem able to turn out so much work in a given time, in the hardware line, as their British rivals. It would seem indeed, as if this estimate of the respective powers was endorsed by M.

Schneider, who pays much higher wages to a dozen of English mechanics, who are employed at Creusot, than to his own countrymen who work by their side.

The quality of most of the work I saw there could not have been higher: but about some of it there was that peculiar heaviness which distinguishes French metal-work. I saw cylinders of marine-engines, which seemed to contain metal enough for engines of double the power.

The town is not only worthy of notice on account of its manufactory, but for its excellent schools, where over 3,000 children are instructed in all the branches of education likely to be useful to them in after-life. Drawing, both mechanical and free-hand, is a very prominent study, as indeed it is in most continental schools. Model dwelling-houses have been erected, and various improvements lately introduced for the comfort and well-being of the workmen, by the benevolent and energetic President of the Corps Legislatif, who owns the greater part of the property in the neighbourhood. As an instance of the good manners which reign in this community of some forty or fifty thousand souls, it may be stated that there are no police or shameless women in the whole place. M. Schneider and his family are beloved and respected, and the good old gentleman's word is law throughout the place. The English workmen who are settled there with their families, are treated with great kindness, and are much respected by the French. They are, to a man, intelligent, sober, and industrious; and their wives are in every way worthy to uphold the character of Englishwomen abroad. I would take this opportunity of expressing my thanks for the many kind attentions I received, both from the French and English workmen, in this out-of-the-way but interesting town.

The lesson which Creusot seemed to convey to my mind was, that the French are gradually overtaking us in the manufacture of machinery; and although we are superior to them now, there is reason to apprehend that some of the young men, who are being most assiduously trained for foremen at this great firm, will out-manceuvre us in the near future, unless, by adopting some similar system of education, we provide ourselves with officers as good as they are.

It is curious that most of the French workmen with whom I have spoken are of opinion that art and handicraft are declining among them. They say that the excessive division of labour has had a tendency to make men more like machines; and the constant breaking up of small workshops has had the effect of disheartening men from attentive study, because they see that without an enormous capital it will be impossible for them in the future to improve their position. I have heard something of the same sort at home, but, for my own part, I believe that the most direct way of producing anything must be the best, and that compensations abound even in the matter of trade ambitions. If a young man sees the extinction of his hopes in one direction, he will most likely be encouraged by the sight of chances in another.

Discipline does not seem to be so strict in French "usines" as in English factories. I saw the hands everywhere smoking and chaffing in their employer's presence, and it struck me that there was generally more cordiality between the masters and men than exists in England. The principal

of more than one considerable firm took a share of a bottle of wine with his men in honour of the English visitors; and I cannot help thinking that strikes would be less frequent in England, if the proprietor of a factory was a little better known to his journeymen than at present. Charles Lamb's saying—that it was impossible for him to hate anybody he had seen—might perhaps be found to convey a useful hint in this direction.

It is a very common thing among our neighbours for men who are improvident, and have no fine clothes for Sunday wear, to work on that day and make holiday on the Monday. These are generally the least respectable members of the French working class; the men who hang about cabarets and low cafés, smoking and drinking for three parts of the week, while their poor wives are working hard in some close garret for their support. The "*mont-de-piété*" has no mysteries from them, for almost as soon as they purchase any new articles of dress they deposit them at the bureau of their "*aunt*," as the agent of the national pawnbroking establishment is cantly termed. The French system in the matter of lending money on pledges is more calculated to repress crime than ours. No article of value is taken in pledge from a stranger, unless he can produce some proofs of his respectability; and every evening the goods deposited at the branch offices during the day are removed to a large central building, where they are not only kept in perfect safety, but also examined to see if any of them are referred to in the notices of stolen property which the police have received. Before redeeming anything, notice must be given, at least a day beforehand, that it may be brought from the chief office.

The married mechanic usually belongs to some benefit society, which affords aid in time of sickness or other trouble, but of trade societies, such as we understand by the term, there are none in France. The idea of labourers co-operating for the purpose of affording each other mutual aid in time of distress, like many other good and beautiful ones, has originally been given to us by the French. When the revocation of the edict of Nantes drove some thousands of artisans into England for refuge, the foundation was laid of those great workmen's benefit societies which, at the present time, number their members by the hundred thousand. Long before this time the old French crafts had existed; and records are preserved of feuds between two of the most important, which took place nearly five hundred years ago. To this day there are in France the "*Gavots*" and the "*Devoirants*," two rival orders of trade freemasonry, the members of each of which are supposed to be full of hate and scorn for the members of the other. Until quite recently, if a "*Gavot*" met a "*Devoirant*," he would not sit at the same table with him, and in every town and village they were constantly coming to blows. The spread of education and the strength of a paternal government have combined to cool the ardour of these two hostile houses, so that actual violence is now-a-days seldom resorted to; but history tells of a time when a regular pitched-battle was fought between them, and a large number on each side were slain. To this day, both "*Gavots*" and "*Devoirants*" claim the victory, but as they have never pitched battled for it again, it is believed that the result was a draw.

The French law permits workmen to combine for the purpose of obtaining an advance in wages; that is to say, certain laws which made combination illegal have been repealed; but, owing to the decrees against public meetings, which prohibits more than twenty people meeting without an authorisation from the police, trade combinations are practically forbidden in France; and yet strikes are by no means rare among our neighbours, neither are trade outrages altogether unknown. "Devoirants" have frequently struck against "Gavots," and compelled the employers to send the unoffending men away. Mills have been destroyed, the houses of employers demolished, and their furniture and chattels broken to pieces, and made bonfires of. It is true there has been no evidence of such an organised system for inflicting injury, as we have seen here; but, as it has been significantly pointed out to me by French workmen, there is no such thing as getting evidence from one workman against another in France. There are exceedingly few instances of what is called by the masters "personal independence," and by the men "ratting." The French, having less individuality, are more easily moved to act in masses; and a workman in France would no more think of defying the opinion of his class than an employer would dream of risking his life and fortune in a stubborn contest upon some small point, upon which the whole of his men were resolved. As an instance of the pressure sometimes put upon employers, I may mention that I have heard that M. Schneider, the chief proprietor of the works at Crensat, was, during the troubles of 1848, compelled to go into his own factory and work there day after day, at the most menial jobs which could be found for him. Again, what would English employers say to a trades' union rule which compelled them to take off their hats when addressing their workmen, if the latter happened to be uncovered; or of another, which settled the exact position in which a master and his workmen should stand, while conferring upon any matter of trade importance; of a third, which ordained that an officer from the union should be empowered to visit the master upon the dismissal of a man, and in his presence inquire of the man whether or not he had anything to say against the way in which he had been treated while working for the other. And yet all these rules, and many others of a similar character, are to be found in force among French workmen at the present day, and the employers agree to them.

But, although the French mechanic is so punctilious in his dealings with an employer, and is so careful to have everything arranged on a footing of perfect equality, he is as fond of caste, and as little inclined to allow of equality in the case of one he considers beneath him, as is his brother in England. In France, as here, the skilled worker looks with infinite contempt upon the common labourer, and the apprentice is treated with as little forbearance as he used to be in England some forty or fifty years ago. Unfortunately for the liberties of mankind, there is nobody so aristocratic as the extreme leveller. I have known a man leave his employment on account of a hasty expression from the head of a firm, and, at the next factory he went to, refuse to drink from the same mug "with a labourer."

Owing to the close scrutiny to which the rules of all French societies

are subjected by the police, there are in some associations codes of unwritten rules and secret signs by which the members communicate with each other, and enforce them. But every French workman with whom I have spoken on the matter of trades unions is in favour of them, and has expressed himself strongly to the effect, that if English workmen allow them to be broken up, it will be their ruin. They want to be allowed the right of public meeting on trade matters; they say if they had that, they would ask for nothing beyond. They seem to attribute the lowness of their wages—which are, as a rule, much below what they are here—and the number of their working hours, also in excess of ours, to the want of their power for open and legitimate agitation.

The French Co-operative Manufacturing Associations are very interesting experiments in the direction of settling the relations of capital and labour on a more satisfactory basis. There are co-operative pianoforte works, bronze-workers, lamp-makers, tailors, and a variety of other trades, and the results seem to be encouraging.

The Prud'homme system only applies to cases of individual disputes between masters and workmen. If more than one man has a grievance, he is not allowed to say "*we* require such and such alterations," but "*I* wish for so and so." This makes it a less useful tribunal than the one which has recently become law in England is likely to be. In Nottingham and the surrounding district these courts of arbitration and conciliation have been tried, and found to work well, during the last seven years.

To bring this already too lengthy report to a conclusion, I would generally sum up the effect which a survey of the French workman, his character, and habits, produce upon my mind. I see in him much for my countrymen to admire, and much in his manner which might with benefit be imitated. But there are so many and such wide differences of race and ideas between us, that for Englishmen to attempt anything like a close assimilation with the French, or *vice versa*, would be to undertake the performance of an impossibility. The individual of each of the two nations seems to start from opposite points; the two communities have scarce a great aim in common. The Frenchman regards life as a something to be enjoyed—to be made the most of; the Englishman only sees in existence a chance for "getting on." The French people want to be well ordered and effectively arranged, they require a government which shall successfully cater for their wants at home, and make them talked about abroad. The British public, on the other hand, only require their government to protect them from interruption. "Guard our commerce, and let us alone," is the usual prayer of the English citizen. He wants no work found for him—he can find it for himself; no pleasure—he seldom takes it.

The Frenchman is by nature and language a soldier, and therefore mathematical and logical, and is consequently in love with rules and regulations, because they are angular. He plants his trees in straight lines; he makes his roads the same; his speech consists of precise, well-drilled words and closely-massed sentences; his most trivial action is done with an air, and every movement of his body is a well-

rehearsed pose. On the stage he is natural, because he can be so according to a true rule of art, but nowhere else, because he thinks nature in itself barbarous. In his work he is exact, as far as he goes, but his fertile mind wanders over too many things to allow him to patiently master small difficulties. He can create better than he can manufacture. He has a quicker imagination than the Briton, but he is for ever expending himself on minute objects; he breaks down when the reserved force is called upon. In France you can tell an Englishman in an instant, by his quiet inoffensive-looking face, indicating a repose, which, among the crowd of strongly-marked features, reminds one of a clean slate among a number of worked-out sums. But the two races are both magnificent ones, and they can never know or see too much of each other. The little wisdom with which the world has been proverbially governed, was never so strikingly instanced, as in the fact that these two great peoples were so long encouraged to slaughter and annoy, instead of being a comfort to each other. In taking the initiative in the measures by which so many of our working fellow-countrymen were enabled this year to visit Paris, and make acquaintance with its warm-hearted people, both in connection with your Society and others who most worthily followed (as you had hoped they would do) your example, I believe your Council have earned the thanks of the two empires; and the seeds of amity which have been thus scattered abroad will never die. Each of your reporters going home will spread in his circle the knowledge which he has gained; and while sensible of some of the disadvantages of the lot of our English workmen, he cannot but congratulate himself and fellows on the position which Englishmen still hold in the earth; and he will probably form the resolve that no light considerations shall induce him to aid in jeopardising it.

In conclusion, I desire to thank you for the honour you have done me in selecting me as your reporter.

THE CONDITION AND HABITS OF THE FRENCH WORKING CLASSES.

SPECIAL REPORT.

By RICHARD WHITEING.

THE present time is most opportune for an inquiry into the condition of the working classes in France. We have just witnessed the close of an Exhibition in which that country has invited all the world to a gigantic competition on her own ground, and, besides showing in the thousand products of her looms and foundries the ingenuity of her working classes acting in union with capital, has devoted no inconsiderable portion of her space to the display of goods manufactured by her artisans in combination with one another and quite independent of extraneous aid, and of inventions designed specially to meet the social wants of her labouring population. The liberal encouragement which, from the first, her project received from neighbouring nations, has enabled her to place side by side, in a far more complete manner than has hitherto been possible, the results both of her own efforts on behalf of her industrial population, and of those of all the principal European states, so that, for the first time in the history of exhibitions, labour has obtained a recognition adequate to its importance among human interests. No general conclusions of the nature of those we seek in this inquiry could have been drawn with reference to any preceding exhibition, because even the best of them was, after all, but a tentative effort, and the mind of Europe had not sufficiently familiarised itself with the nature of the competition proposed, to make that competition one in deed as well as in name. In 1851 the competing nations were taken just as they stood; they were called suddenly to render account of their actual condition, not of their progress, for no previous display had established a starting point: in that of 1867, they had to show how far they had taken to heart and profited by the lessons they had already received; each went into the competition forewarned, and therefore for none of its demerits could it claim the excuse of want of due preparation. It is, therefore, not surprising that the challenge so boldly issued by France should have been taken up in the same spirit by each of the principal nations, and that Sweden and Norway, Russia, Italy, Denmark, Switzerland, and our own country, should have supplied the materials which have, for the first time, enabled inquirers to institute a comparison of the condition of the various industries throughout the greater part of the civilized world.

We must be careful, however, to enter into such an inquiry without prejudice, especially when it concerns nations which, like France and England, have only of late years sought a mutual understanding, and are yet, perhaps, in ignorance of one another's best qualities. Such a recommendation may seem trite, but it will not appear so when we consider that human opinion is chiefly fallible because it is always in extremes. It is possible to despise a rival too much, but it is also quite possible to value him too highly; and those who are familiar with the utterances of Englishmen about themselves and neighbouring nations, know very well that disparagement of home products, home mind, and home matter, is one of the weaknesses into which they most readily fall. Because Frenchmen once proved themselves immeasurably our superiors in taste and in ingenuity, it is too readily concluded that such relative superiority is still maintained; and because in those arts in which we were allowed to be in advance of them they have been gradually lessening the distance between us, it is thought that the palm of merit—no matter in what line of human undertaking—is gradually passing from our hands into those of our rivals. But, in plain truth, the gains and losses on both sides have been regulated on much the same principle as that which causes the tide to deposit in one part of the coast that which it has taken from another. If France has made progress in the coarser arts—if she now manufactures machines which enter the English markets, and compete advantageously with our own—we have made an advance not less marked in all those manufactures in which formerly the taste and skill of the art workmen of France gave them undisputed sway. For every French steam-engine consigned to a foreign port, where once only English machinery was in demand, a hundred bales of textile fabrics from the English looms are now sent to cities which once only opened their gates to the productions of French skill; and English art-manufacture, unheard of but a few years since, is beginning to be a power in the world. We must therefore seek to divest our minds of all traditional beliefs in the superiority of foreigners to ourselves, and accept only such as, after due examination, shall be found to harmonise with the facts of our own time. The Frenchman is generally considered to have more natural ability than his neighbour on this side of the Channel. He has not; only his ability has hitherto been displayed in works that more readily appeal to the eye. He is also said to be happier; but life has its inevitable miseries in France as in England, which differ in form only, but not in degree. The Frenchman—and especially the French workman—finds subsistence quite as difficult a problem as does the Englishman, and he is equally the victim of keen competition in trade, insufficiency of earnings, the dearthness of provisions, clothing, and rent. There is no Arcadia beyond sea. We must hesitate, too, a long time before we assign a sad pre-eminence even in certain so-called national vices to our own people. The French workman is not always at work; there are days when he drinks more absinthe than is good for him; and not seldom the same amount of time and money which we waste in our rougher sports is spent across the Channel at billiards or at cards.

Notwithstanding these melancholy resemblances—which are, however, resemblances for all the world as well as for England and France—it

must be confessed that there are differences enough between the working classes of the two nations. But what is here chiefly insisted on is, that these differences are radical, and will remain so, and that all inquiry with a view to turning the Englishman into a Frenchman in all but the accident of birth would be as unfruitful of practical issue as it would be unworthy of our proper self-respect. There will always be a difference between the genius of the one nation and of the other, and the true object of an inquiry should be as much to make us aware of that difference, and lead us to respect it, as to discover the resemblances between the peoples. We should first carefully ascertain our own capacities, their scope and evident direction, and then those of the persons from whose example we desire to profit. Such study will teach us what things we can copy with advantage, and what others we had better leave in the undisturbed possession of their owners. All wise self-cultivation must proceed in this manner, for, indeed, the first and last step in it is a knowledge of the nature of the thing to be cultivated. The French mind exhibits the extraordinary union of the most brilliant fancy with the most active deductive faculties. The Frenchman has the logical faculty in perfection; he can reason with the utmost exactitude, and at the same time he is capable of the most daring flights of imagination. Traces of these qualities will always be found in every essentially French production, in everything which bears *par excellence* the stamp of the French intelligence. The Englishman is poorer in fancy, and less logical in the form of his thought; but he has an originality which is the direct consequence of this want of sequence of ideas; he feels his way to truths which his neighbour reaches by more palpable methods, and he compensates for the slowness of his fancy by his conscientiousness (using the word only in its relation to art). Were he to give his fancy the rein he would run the greatest danger of falling into mere extravagance, and, in like manner, were a Frenchman to demand of himself that perfection of accuracy, of patience, of trust in his own unaided effort, which contribute mostly to the Englishman's successes, he would probably find that he had exchanged tools which were thoroughly familiar to his hand for others of which he was never destined to be a master. The English and French minds are like two fair blossoms growing side by side and springing from different soils, but differing in hue, in perfume, and in form. They can never become alike, but the more each is assisted in developing all its varied excellences the more will it enhance the beauty and the perfection of the other.

It ought not to be inferred from this that the French and English can learn nothing from mutual contemplation, or, at least, nothing of practical good. On the contrary, there are certain things for which all men have a common natural aptitude, and in which they can advantageously imitate one another. It will be the aim of this inquiry to discover those, to dwell only on such improvements in trade or in the arts of domestic life in France as are capable of being transplanted to our own soil, without disturbing the injury to our institutions or to that individuality which, as a nation, we ought to be proud to preserve. It is an inquiry into the condition of the French working classes, but it is not forgotten that it is written for the perusal of Englishmen.

An inquiry of the nature proposed would naturally divide itself into the following branches:—first, the character of the French workman in which would be considered his natural aptitudes, the bent which the circumstance of birth, more than of education, has given to his mind; second, the French workman in his relation to his calling, that is to say, in what manner his individual character and training bears upon the general condition of that calling. Then his relation to the state, in what light he views the Government that legislates for him, the laws he obeys, and what are his opinions of his duties to that Government and their obligations towards him: lastly, his relation to his family, his position in it, and the unwritten laws of custom that regulate his behaviour towards his social equals. Then, again, the compensating effect of all these influences upon the man himself, that is to say, in what manner he is affected by the laws of his trade, the opinion of his fellows, the interference of the state, the duties of family life. In the first he would appear as the unit of a great whole, and would be considered only as forming part of that whole, as tending, by his single action, to create those entities which we call law, trade, political and social life; in the second it would be shown how these various forces influence him as an individual. In the one he is a cause, in the other an effect of the causes he himself has set in motion. This answers to the dual nature of man's life—we create the influence, and then are influenced by our own creation.

And first, as to the general character of the French workman. We have before shown that it is remarkable chiefly for a strange union of the capacity for exact knowledge with that brilliancy of fancy which is generally considered incompatible with it. Looked at from one point of view he is the creature of impulse and feeling, and from another he is a man whose severe and pitiless logic leaves no loophole to the fancy or the imagination. From this arises the precision and the amplitude of his laws, his fondness for theoretically perfect states of society, into which, however, when framed, his own impulsiveness introduces the first elements of imperfection; and in art and manufactures the power of combining richness of decoration with the most severe purity of taste. From this, too, arises the mobility of his character, which enables him, with comparative ease, to adapt himself to radical changes, in either the forms of social life or the modes of carrying on the various manufactures. In the history of labour in France there are much fewer instances of combined opposition against the introduction of machinery or of new processes generally than are to be found in the annals of our own country. The superior mobility of the workman enables him with greater ease to penetrate to the principle of any new process submitted to his notice. He has all along accustomed himself to work with an eye to principles; it is intuitive with him, and he can work in no other way. He has, therefore, little to conquer but the mere manual awkwardness in the use of new tools. Whereas, on the contrary, the English workman learns much more by rote, by imitation, than by a clear perception of the why and the wherefore of the processes he uses. It is this more than anything else that tends to produce that impatience of change at one time so characteristic of our working population. It is not alone that the workman will not learn anew; he cannot. The habit of

a lifetime is much harder to conquer than the firmest conviction which has reason, however faulty, for its base. We cannot borrow or adopt the intuitive love of the principles of art from our neighbours, but we may easily supply its place by careful technical training. A French boy in a workshop is perpetually asking why he has to do a certain thing; an English boy, on the contrary, needs to be perpetually told, and it is on this account that lectures on the principles that govern taste and construction should form a prominent element in English art-education. In support of this view it may be remarked that in those arts in which, above all, a knowledge of principles is necessary, the French workman is generally prominent, while in those in which a certain perfection of habit is required, his English rival bears the palm. Our neighbours are the best designers, the best workers in materials that demand a careful handling, and a very exact knowledge of their properties. We are the best smiths, the best working engineers, the best carpenters, joiners, and ship-builders, as separate from ship designers, and our textile fabrics are superior in construction, if not in design. That impatience of first principles, which moulds our law and our politics, has also a most marked effect on our manufactures. In the French workshop it is more common to find the ingenious mechanic, whose theory of his business is considerably in advance of his practical power; in the English, the man who is a marvel of mere rote cleverness, who thinks little, but to whom habit has taught the perfection of action. The English workman extricates himself from his difficulties by patience, by imitative observation, by a perpetual renewal of experiments, till one succeeds: the Frenchman by reflection; he compares and deduces, and can see the result long before he has the power of attaining it. Each is an admirable quality in its way, and the splendid rivalry of the two nations in the various manufactures is a proof that each is equally capable of conducting to great results. It would be impossible to thoroughly revolutionize the English method of procedure, but there is no reason why it should not benefit by those modifications we have suggested. We are convinced a course of systematic instruction in the principles of design and the nature of materials is what is most needed in our art schools at the present day. It is not enough to give men the best examples to copy, the best materials to use; the greatest care should be taken to explain to them why those examples and those materials are considered the best, to show them that beauty in the wrong place becomes deformity, and how narrow is the boundary-line, which in art, as indeed in every field of human endeavour, separates the sublime from the ridiculous. All, or nearly all, the faults which in the past were charged against English design, were mainly traceable to the causes we have pointed out. It was not denied that there was beauty here and there, in our houses, our furniture, our dress; but what was complained of was, that those beauties were mostly chosen without any perception of harmony in their relation the one to the other. They were exotics from many climes, loosely jumbled together, each neutralising the effect of the other. Since the establishment of art-schools in this country, we have made a much nearer approach to congruity of ornament, but much yet remains to be done. Whereas, in the

earliest examples of French manufacture, there is always visible a certain sense of the becoming, a certain harmony of parts and subjugation of details to one leading idea, a false one it may be, but still having a distinct individuality of its own. The word style is always on the French workman's lips, and its claims are no less rigorously enforced in the inferior products of the industry of our neighbours than in their highest efforts in literature and in art.

We have now to consider the French workman's relationship to the state, that is to say, the view he takes of the obligations of government towards him; and of course we quite omit from this all mere political considerations as being foreign to our present purpose. The Frenchman has always looked upon himself as a protected commodity of the state; his government is in a direct manner answerable for his individual welfare; it is an obligation of that government to see that he eats, drinks, lodges, educated, and generally provided for in a manner answerable to the requirements of an intelligent being, and to this end he not only tolerates, but demands the most active interference with many matters that in our own country would be considered desecrated by the touch of government. This is no new idea; it will be found that in every great convulsion in France the leading charge against the power overthrown has been that it failed in its duty of directly providing for the welfare of the people. The constant efforts of the present Government in this direction, the great interest its chief representative has always shown in all schemes for the improvement of the health, comfort, and happiness of the people, show that his sagacity has not failed to point out to him the surest way to their affection. The notion of the functions of Government entertained in this country would not be tolerated for a moment across the Channel; and it may be doubted whether our dislike to what is called special legislation—to legislation, that is to say, which proposes as a direct aim the improvement of the social condition of our people—has not its weak as well as its strong side. The constant difficulties experienced by individuals struggling alone to effect social reforms, often never aided by Government till the necessity for all aid has passed away, would seem to indicate that it has. From the view of the obligations of Government taken by the French people, it necessarily arises that instruction, both superior and elementary, has long had that recognised position under the protection of the State which it is only just beginning to have here. A due provision for art education, for instance, is no favour on the part of the administration, but one of the conditions of its existence. In every town of any importance in a manufacturing point of view, in every district of all the principal cities, there is to be found the art-school just as there is to be found the church or the baker's shop. These schools are in many cases not commodious, not built for the purpose, but mere rooms converted for the occasion; but in all the system of instruction is the same, and the pupil entering one, even the smallest, becomes affiliated, as it were, to the whole body, and embarks in a career of instruction which will only terminate where his ignorance or idleness shall place the limit. It is not denied that similar institutions are to be found in our own country: but among us there is a very perceptible want of Government responsibility for the welfare of

the schools, and they are not placed under the direct patronage of the officials of the district, who in France commonly attend to give a solemn character to the distribution of the awards. The highest art-education costs the student nothing, as with us, but in France the way to obtain that education is practically more open than here, and there is really nothing to hinder the son of the poorest man from obtaining such knowledge as could not be rendered higher in quality if it were offered to the heir to a throne. The truth is, our higher art-education is even now hardly more than nominally open to the student, because the body which affords it, though composed of talented and worthy men, is not a *propagandist* body, because all of its members have an equal interest in and an equal responsibility in extending it, that is, practically, no interest and no responsibility at all, and what is everybody's business is nobody's business, as the adage truly says. There is the instruction—anybody may have it, who chooses to apply for it under proper conditions, but no one is invited to apply, because it is nobody's business to invite him, and there lies mainly the difference in all educational matters between us and our neighbours. We canvass actively for political or commercial objects; there is very properly a very active propagandist movement in religion, but in education, one of the most vital of all interests, and especially in art-education, nothing of the sort is attempted, at least by any government body. Those who choose to demand it, have certain facilities afforded them; those on whom no perception of their want has ever dawned, are never made aware of it by means of any measure taken by the authorities. In France, the minister of instruction has confided to him as it were a nation in a certain state of knowledge, and he is expected, when he resigns the seals of office, to show that under his care that nation has steadily progressed; he may demand certain aid from the Government, his claims have a recognised place in the budgets, and he is entitled to speak by the admitted importance of the interests over which he presides. It would be well, if with us some such system could be devised, in place of that which gives us an irregular and spasmodic support to art on the part of our public representatives, and which too often leaves its fate in the hands of only one or two well-meaning members of parliament, who may, however, retire from public life at any moment, and leave no successors. What is above all wanted is Government countenance, as well as Government aid. In France, as we have said, the distribution of prizes, the opening of schools, is always made more or less a ceremony. The whole population of the district in which the school is situated cannot fail to hear of what is going on. Publicity and *clat* are given to all the proceedings, and the school immediately reaps the benefit. Of course it is not to be inferred that the Government of France does everything for art-education, and private individuals nothing. There is a considerable amount of private patronage, though to nothing like the same extent as among us; but it is always desirable to substitute for the irregular action of individuals, however well disposed, the order, the economy, the persistent effort of an official body.

This part of our inquiry has led us for a moment to the art-schools, and before dismissing them—though the subject forms no part of the

purpose immediately in view—we may state that a great cause of their success in France is that employers of labour have long made some instruction in them an almost indispensable condition of employment. This is especially the case with the younger men—those who are under direct control of masters; that is to say, they have in most cases positive commands to attend the art-school, and where not these, the general opinion of the “atelier” in which they work has all the force of command.

It may seem paradoxical to say so, and yet it seems perfectly clear that the functions of government are much better understood in France than in England; for it is to be observed that the solicitude of the administration on all matters concerning the welfare of its subjects, its belief that that welfare depends upon its efforts, is no new phenomenon in French history. Whatever Government be in power—the most liberal or the most absolute—the same care is shown in providing for the general good, and the only differences in opinion are as to the means. A Frenchman is not impatient of interference as interference, but only so far as it may prove ineffectual in remedying evil; and he will much rather tolerate a prying, inquisitive Government which periodically takes stock of the number of eggs in the cupboard and fowls in the barn, than he will tolerate the want of eggs and fowls through the neglect of some such precautions. It is very properly considered that the administration, having in its hands the springs that move the whole nation, should take care that the whole moves for the benefit of the parts, and that the just co-operation among others for his benefit which the suffering private individual cannot command should be commanded for him by those who are charged with the business of overseeing all the interests of the State. Infinite are the labours of the French Government in this direction, infinite its responsibilities. It cannot plead surprise as an excuse for neglecting to provide against any calamity. If a famine threatens its people, it must take timely measures to avert the threatened consequences of that famine, for when once the cry “Bread” is raised in the Paris streets it is the death-knell of the party that has nothing but good advice and a citation of the laws of political economy to offer. In the recent Exhibition the extraordinary number of models of workmen’s dwellings, designs for household utensils, plans for school buildings, and the apparatus of teaching exhibited by France, all testify to the earnestness of a Government with whom adequate provision for, at least, the first necessities of the existence of its working classes is regarded as an awful responsibility, not to be evaded by any convenient theories on the necessity of letting things alone to manage themselves. The French workman does not think that things manage themselves. The perception of cause and effect has become too much the habit of his mind to make him believe that, as a rule, corn will spring up where no seed is planted, and that roses may be made to grow from the stems of weeds. And there is this further to be observed, that, where Government will not step in to organise for the benefit of the workman, he will take to organising for himself; he and his fellows will form into an irregular corps and skirmish about in the body politic, to the imminent danger of friends as well as

foes—of their own interests as of those to which they are in opposition.

Let us now consider what the State does for education in France, both for primary instruction and for the special training required later when an art or trade has been chosen. The system of primary schools so very much resembles our own, both in the nature of the instruction given and in the mode in which support is obtained, that no detailed account of it will be necessary. Our poor children enjoy advantages in this respect quite equal to those of their little allies beyond the Channel, only one thing is to be observed in France—religious influences are generally brought to bear upon the parents with great effect, when other considerations have failed to make them do their duty to their children, and the scandal of having an undeducated child is felt keenly, especially in the smaller communities, but it is in the facilities for the higher education which ought to follow this primary teaching where the inclination exists that the great divergence between the English and the French begins; the ease with which a poor boy may obtain an entry to one of the imperial lycæums or larger public schools, which prepare for the universities, and thence go up to the universities, which very properly are in the capital itself and are all free, is something marvellous, and is only equalled by the excellent facilities of a like kind which exist in Germany and in Scotland. The poor student is no conventional character in the Parisian life drama, but his poverty is felt to be honourable, and the Government has devised a hundred little expedients to mitigate its effects; he is admitted or admissible at least into French society; and that Bohemia which has conquered itself a domain in the Latin quarter beyond the Seine is no mere refuge for vagabondism, but a territory whose inhabitants are all bound together by a common allegiance to the Graces and the Muses, and who recognise the great truth that there is no real poverty where arts and science smile.

The intellectual education of the French workman, as received in the primary schools, is of course little different from that which is given in our own; there are certain things which all children must learn, and no children up to a certain age can learn more: but the workman who has remained at school long enough to add the superstructure to this foundation, has been through a course of instruction quite different from that adopted in our own country. With us the higher education is too exclusively literary, and it is only by stealth that the sciences have obtained a place in even our most renowned schools; in France there is hardly any teaching beyond that of the most elementary kind, in which the positive sciences do not play a very important part, and a good knowledge of them is indispensable to every man who aspires to obtain any leading position. The workman who may not have the opportunity to go through the whole academical course, has yet obtained such a tincture of science as is in the highest degree useful to him in his future career, and ignorance of the properties of most of the substances with which he is brought in daily contact is much less common among the artisans in France than it is among those of our own country.

The technical education of French workmen is of two kinds, elementary and advanced. In the first, the child having been early destined to a

particular trade, is placed in an institution, where he serves a kind of preliminary apprenticeship to that trade, and where primary instruction goes hand in hand with the special training requisite to give him a more enlarged knowledge of his business. These technical schools for children are, however, only just beginning to be established, but the results in the last of which accounts were published were in the highest degree satisfactory. The children are occupied in all about nine hours of the day, the rest is devoted to sleep, meals, and recreation. In the morning they receive instruction of the ordinary kind, which is also given for an hour in the evening, and during the day they work in every respect as if they were apprenticed to private individuals, only that a certain portion of the time is devoted to teaching them the rationale of their art. By this arrangement they enjoy all the pleasures of the society of those of their own age without the dangers of the contamination of bad company; they learn methodically, and never have their strength overtaxed at one time, to serve the temporary requirements of trade, and neglected at others when there is no immediate want of their services; they are likewise fully secured from the brutality which solitary masters too often exercise towards their pupils; they are under the supervision of persons duly qualified to care for their moral, as well as material, welfare; and, the schoolmaster, the workman, and the priest, all working in harmony, the child's development is gradual and regular, and one course of instruction does not interfere with the other, as is too often the case when the various teachers have not a common purpose in view. It has been stated that at present these institutions are very few in number, as hitherto they have only been regarded in the light of an experiment, so that only a very limited number of trades can at present be taught in them, but there is little doubt that, as an experiment, they have been successful, and that when their success shall have obtained general recognition, the Government will take measures for establishing them in all the principal towns. The peculiar fitness of such institutions to the present condition of labour in France will be evident when we consider that the co-operative principle is making rapid strides among the workmen in that country, and that these are but the application of that principle to the workmen's children. It is only a necessary consequence of men's working together in large societies that their children shall be taught to work in the same way.

An equally important tentative effort in the way of technical education has recently been made in the establishment under Government patronage of an institution for the higher technical training of youths, that is to say, for the union of the highest theoretical with the best practical teaching in the manufacturing arts. This institution is somewhat in the nature of the *Ecole des Arts-et-Métiers*, only it is not so exclusively theoretical as the latter, but aims at supplying a want long felt in France, namely, that of skilled foremen competent to superintend, or, at least, fully understanding, all the operations of a large manufactory. This want is of no new creation. Years ago, when general attention in France was directed to instruction in principles, and the great firms began to demand a supply of workmen whose abilities should be equal to the needs of the time, it was found that, among the many who came forward competent enough

in the *rationale* of the various processes, not a few had disdained the labour, and a still larger number had never had the opportunity of learning the mere mechanical routine of manufacture, so that there was a constantly recurring difficulty between them and the mechanics they were brought in to aid. They resembled legislators who make laws for a province at a long distance from their own country, not knowing the actual condition of the thing they are called on to improve, the actual needs of the artisan. They either worked for a long time in a direction in which nothing practically useful could be found, or they threw an unnecessary light on the more unimportant operations of the workmen, while with regard to those in which he wanted all their aid they left him in the same obscurity as before. A few men who, workers themselves, had, in their intervals of leisure, assiduously cultivated a knowledge of the principles of their labour, more for their own gratification than with the hope of any immediate advantage, at first suggested a way out of this difficulty, and ultimately the forming of the institution described was decided on, in order that a great want might no longer be supplied by hap-hazard efforts on the part of exceptionally gifted and industrious men, but that a regular supply of duly qualified workmen might be kept up. The Government lent its hearty co-operation. It is as yet impossible to speak with any certainty of the results of this work, of which, however, the very greatest good is confidently expected.

But in congratulating ourselves on these efforts for the spread of art and technical education, one thing must not be forgotten, namely, that the French workmen do not avail themselves of such advantages in the same proportion as they did five-and-twenty or thirty years ago. It is an undoubted fact, testified to by the complaints of all large French manufacturers, that though in numbers the attendance at the various schools is perhaps as great as it has ever been, yet, in proportion to the increase of population, it is smaller than in former years. A great many causes have been assigned to this, and some complaints have been made of the mode of education, but they are not well founded; for it can be proved that that has gone on steadily improving, and is at present fully abreast with the needs of the time. The true reason, as gathered from the testimony of the men themselves, seems to be, that the work exacted during the day is now so much harder than in former times, that there is no energy left for the evening-school studies. Whatever may have been the alterations—and they are but few—made in the hours, the rate of labour has gone on steadily increasing. More work is now demanded of a man in a given time, and when that work is done, body and mind are so fatigued that relaxation is sought in the café, or at the theatre, and none but the most active intellects have the energy for the additional labours of the school. This deserves great consideration, and it would be easily understood by comparison with the practice prevailing among the classes that live by scientific pursuits, or brain labour generally. A man reading for a degree is considered a fair student if he is at his desk six hours a day, a worker far above the average if he reads for eight or nine. After that time he properly takes care to obtain relaxations in the most frivolous amusements, or at least in such as relieve him to the

utmost of the labour of thinking. Well, the work of a skilled mechanic during the nine or ten hours of his working day, often in an impure atmosphere, and with materials destructive of health, makes no less a strain upon his faculties than would the student's reading, and he is obliged to devote his attention to strengthening his body, and reviving his spirits for the new task of the morrow, rather than to making the more trying preparation necessary to yield him advantage in a more distant future. If any one fact seems to be established—not only by the trade combinations among our own workmen, but also by the growth everywhere of the most frivolous amusements among the people—it is that the working population are called upon to labour too hard, and the reaction of both mind and body after such labour is fatal to the spread of education among them; or, indeed, to the indulgence in amusements of an elevating and instructive character. In former times, whatever the nominal time of labour, the rate was certainly much easier than now; the frequent holiday, the moderate pace at which the average workman progressed, made him take up some scientific pursuit as a positive pleasure—a safeguard against the frivolity in which he would otherwise have been compelled to pass his abundant leisure. Now, the French workman passes his short evening at the café, in the dancing-room, or the music-hall; and on his fête-day he takes a quiet stroll into the country. In our own country men work harder, and have fewer holidays, than even in France; and, consequently, we must be astonished at the large attendance at the evening art-schools, rather than surprised that it is no greater.

To illustrate our meaning more fully, let us for a moment refer to the history of the Mechanics' Institutes, established many years ago in this country. In those institutes, as originally organized, facilities were afforded for really deep study. The best professors were engaged, and gave their services for nothing; and well-nigh every branch of human knowledge had its class-room. Indeed, a man might have built up an edifice of learning, in the highest acceptance of the word, with no other aid than his industry, derived from the courses at the institute. For a time all went according to the intentions of the founders; men joined in great numbers, and one or two annual examinations gave very encouraging proofs of the proficiency of members; but only for a time. It was found that gradually those classes in which the more serious studies were pursued lost their students, while the one or two that theoretically combined instruction with amusement, but practically afforded amusement only, increased largely by desertions from those which professed only to instruct. Elocution, dancing, and singing became principals where they had formerly been subordinates, and were obliged to have their interests consulted of necessity, where once they had only been consulted by toleration. Latin, Greek, mathematics, geology were still on the prospectuses, but everybody knew they were there rather as memorials of what had been than as signs of what actually was. There were still earnest students, whose constancy in the pursuit of knowledge under difficulties was unshaken; but their numbers were not sufficient to give them any weight in the institutions, or to arrest the inevitable process of deterioration in the quality of the teaching,

when it was found that scarcely anybody came to be taught. The simple truth is, that the mass of the men who first joined found that they had miscalculated their own powers of endurance; hard at work during the day, it was necessary to them that the night should bring with it a little forgetfulness of work, and this necessity gradually altered the whole character of more than one institution. In the country, under different conditions of labour, and even of health, they still flourished, but in course of time those in the metropolis became mere working men's clubs, their lectures degenerated into entertainments, their libraries exchanged the works of Bacon for the three-volume novel, and in their reading-rooms the Greek Lexicon was abandoned for the evening paper. A determined effort made of late years to revive the old system of teaching, has only resulted in a modification of that which previously existed, and recreation, innocent recreation it is true, is still the mainstay of nearly every institution in the metropolis.

Without attempting to praise or to blame the workman for his determination, we simply point to a state of things which exists in our own country as well as in France; and we are of opinion that hand in hand with all efforts for the spread of education should still go others for the diminution of the rate of labour.

It is, we believe, generally admitted that French art-workmanship is, on the whole, superior to English; it would have been difficult indeed for any one who had merely visited the late Exhibition to avoid such a conclusion, for, in addition to the splendour of the French display in nearly every branch of human industry in which good taste exercises a predominant influence, not a little of what was most excellent in English art-goods was contributed by firms that are known to employ French workmen, and indeed bore very evident traces of French workmanship: just as a great many machines that gave French writers great cause for congratulation on the supposition that they were of home-make, bore, in parts not submitted to the eyes of the public, the stamp of English firms. This superiority admitted (and we think we are justified in admitting it), it remains to ascertain its cause.

Firstly, the very superior mode of teaching apprentices in French shops must be taken into account. The taking of an apprentice is looked upon as a most serious matter, a grave responsibility, which few masters are willing to assume without feeling perfectly certain that they are able to discharge it. Once in the shop, it is never for one moment forgotten that the boy is a pupil; he is treated in every respect as a schoolboy who has been transferred only to a higher school, and is never for one moment put to work that has not some direct bearing on his future career. The course of teaching is systematic; a graduated series of tasks is prepared for him. His emulation is excited by praise, and is yet at the same time directed into its proper channel. There are two difficulties to contend with in the training of boys, and each of these is well provided against: the first is mere idleness, the indisposition to learn at all, against which measures of some severity are taken; the second is the ambition to perform feats rather than to do duties. It is not at all uncommon for a boy, who likes his trade, to wish to be set to some work that would require all the skill of a competent workman before he has ever mastered the alphabet

of his craft, and has learned how to handle the simplest tools. This tendency, generally hailed as a proof of spirit in English shops, is rigorously suppressed in France, for it is rightly felt that no number of feats performed under exceptional circumstances of difficulty, which would never occur in real life, can ever make a skilled workman. From this view of the case it necessarily results that the boy is positively required to obtain some art-instruction, and as this instruction is carefully graduated, too, he has the satisfaction of feeling that every hour his course becomes plainer to him. What he learns to-day seems only a necessary consequence of what he learned yesterday, and he is never obliged to retrace his steps.

In an English shop, on the contrary, there are many and woeful errors committed in the treatment of apprentices. They are too often taken without the least sense of responsibility, and simply for the sake of the premium that is paid for them; too often looked on merely as sources of profit even after the premium has been paid. For a long time they are employed in the most menial offices, in sweeping and dusting, running errands and waiting on the men, and when they at length rebel against this treatment they are, as it were, turned loose into the shop, and do just what work comes to hand; to-day a task far too difficult, to-morrow one far too easy; they "pick up" their knowledge rather than gain it in a methodical way. If apprenticed in a large firm they are less liable to be employed in mere menial work, but then they miss the supervision which would be exercised over them by one man directly responsible for their welfare. Their master is hardly aware they are in his shop, and it is no workman's especial duty to teach them, since to none specially have they been apprenticed. Consequently, what instruction they obtain depends very much on favour, on the impression their personal good qualities make upon the workmen, &c., a state of things, it must be admitted, far from desirable.

If we go a little deeper into causes on this question, we shall find that the inferiority of English art-workmen is mainly traceable to that commercial spirit in which even art is regarded in our country, which floods the markets with slop-work got up only to pay. A master has often no other thought than pay in taking an apprentice. He, as soon as possible, makes the boy what is called practically useful to him, that is, makes him a mere money-earning machine, and puts him to work that in nowise tends to his artistic development. The boy, on his part, partly from the prevalence of this spirit in the shop in which he works, partly from the teaching he receives at home, is well content to become a mere money-maker; he soon sees that the high-priced but slowly-created productions of art often yield less than the poorer paid work of mere manual dexterity, which can, however, be turned out in indefinite quantities; he learns to do one or two things which are known to sell, and longs for the time when he can escape from the trammels of apprenticeship, and begin to earn money for himself. Many so-called art-workmen in England can do little but the most primary operations in the trade they profess to understand; but these they do with such surprising speed and readiness as to earn a special reputation for work of that particular branch, and with it more money than could be gained by the often difficult, always uncertain, processes of art.

If it were possible to obtain records of the average time that a boy remains in an English art school, some astonishing results would be obtained. It would probably be found that at the most he is not there a year; at the end of that time he has seen that his attendance at the school will not necessarily ensure his making a fortune; that to such an end he would be much better employed in getting together a small collection of tools of his own, picking up a few customers here and there, and making the best of his one talent, instead of laying it by in a napkin, as he considers the mere student does. If asked in after-life to look at the progress that student has made in art, he will point to his own progress in fortune, and will consider his conduct amply justified by the comparison.

The remedy for these evils it is not easy to find. Of course, primarily, it rests with the public, who ought to discourage slop work by every means in their power, and on all possible occasions support the cause of taste and conscientiousness. But it is not easy for the public to do this, unless their own taste is in a measure educated; and the want of this education is painfully evident in our own country. Its cause is not difficult to find. Art here has no publicity as it has abroad. It is, after all, an aristocratic relaxation—not a feeling that forms part of the sympathies of the people. All the exhibitions of pictures in this country, with the exception of those that are free—and this exception is very important—are regarded as purely fashionable places of resort. That of the Academy is perhaps the most popular of any; but, even of the crowds who flock to Trafalgar-square during the season, the vast majority are certainly of what are called the "well-to-do classes," and their enthusiasm for pictures is but momentary, and never leads them to visit other galleries, where, perhaps, they would meet with superior works.

This general spread of taste among the people of France, though perhaps not all we have been led to believe, is far in advance of what exists in England,—there are more galleries for the people to visit, the access to them is easier, for they lie in the heart of the town, and there are more opportunities for visiting them, as they remain open on Sundays and all fête days. Again, the Parisian cannot walk through the streets without seeing objects of art-workmanship of no common order of merit: the rich carvings on the fronts of the houses, the many statues, columns, fountains, arches, nearly all designed with the purest taste, tend to familiarise him from infancy with the highest standards in art-workmanship, and to make it proportionably difficult to impose on his judgment with inferior productions.

But this will not do all; besides, it is not exactly a practical remedy, for we cannot pull down London and rebuild it with new columns, fountains, statues, and picture-galleries in a day. We have, however, only considered the remedy as it lies with the public; and even if the exigencies of public taste should ultimately make our young artisans ask which is the way to the art-schools, that inquiry will avail little unless there are in existence plenty of art-schools to which they may be directed. If we would make the attendance larger, we must increase the accommodation. A boy who has to walk for three-quarters of an hour or an hour from his work before he can obtain the means of instruc-

tion, and who after that has another long journey home, will probably, even on account of the mere loss of time, soon cease to become a student. In Paris, branch drawing and modelling-schools are much more numerous than in London, and they are always occupied by classes of some sort, even when not in possession of art-students.

Upon the whole, looking at education in its entirety in France, we may conclude that it is not so much in the quantity as the quality that our neighbours have an advantage over us. Whether in art, in science, or in the simpler elements of knowledge, their teaching is based on principle, ours on rote. Even children in the infant schools are trained on an adaptation of the Pestalozzian system; they learn to analyse, to combine, to think, in short; ours learn to repeat. This would, however, hardly be a just observation in reference to our children of the working classes, who, happily, in the national school system recently established, have a far more perfect machinery for educational purposes than their little brethren of the middle class. We say deliberately that the national school teaching of England is, in all the essentials of educational merit, far in advance of that in the numerous private establishments which are supported by the middle, and even by the upper classes. The national system of art-teaching, too, is the only one worthy of the name we have ever had in this country, and this precisely because it is a national system, and its power for good is unlimited. If it will only first make quite clear to the world its principles of teaching, its aims, and its mode of attaining them, give a sort of state solemnity to all its more important ceremonies, secure to the utmost State assistance for its enterprises, and, above all, regard itself as a propagandist power, just as a good church, indeed, as every good institution should, there will be nothing to prevent its fulfilling its high mission. It is by these means chiefly that education in France has already produced such excellent results, and promises to produce more. We may add one more means to the list—frequent public examinations and exhibitions, and liberal awards. It is by these means that the Society of Arts has of late years so vastly extended its sphere of usefulness, and done so much towards putting English genius and enterprise on a fair footing with the rest of the world.

The next great division of the subject of working class welfare in France is that of wages, and all statements with regard to that must necessarily be general, for, such is the variation of wage between town and country, between one city and another, and even one section of a city and another section, that only tabulated statements, for which we have no space here, could enable our readers to form a full conception of it. In Paris, for instance, there is a difference of from four to five sous per day, between the wages paid on the right and left bank of the Seine; again in the Faubourg St. Antoine the workmen are worse paid than in any other quarter of Paris; there, carpenters and joiners will earn from four and a half to five francs per day; the superior sort of stone-carvers from eight to nine francs, while in the provinces those workers respectively gain but half of the above-named sums; but perhaps the rate of wage would be stated in the simplest way by saying that, substituting francs for shillings, a French workman is paid from nine and half to ten

per cent. less than the English artisan. As all pay is only relatively good or bad, the adequacy of this will have to be determined by other considerations.

Two evils, of which French workmen complain, are the mode of making engagements, and of paying wages. In nearly every considerable branch of trade now, a set of sub-contractors, half foremen half little-masters, have sprung up, who take the work at a price from the large masters, in whose name it is carried on, and then make their own terms with the men. Each of these persons contracts for only a branch of the work: thus, in building, one would make himself responsible for the brick-laying, another for the stone-work, another for the carpentry, and so forth. Owing to their very intimate knowledge of the habits and of the necessities of the men; in fact, owing to their personal knowledge of most of those they engage, they are enabled to drive a much harder bargain with them than could possibly be driven by a large master, ignorant of their peculiar necessities; their number, too, diminishes the power of the workman to resist them, for he would have many monopolists to combat before he could enter a protest with any effect. The one large master would be very easily reached, but in all references to him he excuses himself on the plea that wages are no affair of his; they are a matter strictly between the sub-contractor and the workman. The sub-contractors, naturally uniting in favour of all their monopolies—form a body of considerable power and resource, whose resistance it is by no means easy to overcome. Their efforts of late years have steadily tended towards the lowering of wages, and the stone-carving industry, one of the most important in Paris, and, perhaps, in France, has suffered most heavily in this respect.

It was said that the workmen complained of the mode of paying the wages. This was hardly correct, for the complaint has not as yet become sufficiently general to warrant the assertion, but individual workmen do from time to time express their dissatisfaction with the present system. The payment of wages monthly is very common in Paris and the larger cities, and, though this at first sight appears to be an advantage, it is found to cause much hardship to men who are seldom able to husband their resources, to buy and sell for the best, as to leave themselves with adequate funds at the end of the month. Among our poorer workmen the last days of the week are proverbially those in which a little coarser food has to be eaten, and a few shifts resorted to for the supply of the necessaries of life. Among the French, the last days of the month constitute this bad time, and the straits to which the under-paid artisan is sometimes reduced at this period are very distressing, more distressing than ours in proportion to the greater interval that elapses between the payments; and debts are gradually contracted which make a heavy drain upon the salary yet only in prospect. The temptation to fancy oneself very rich when any considerable sum of money, however small in proportion to one's general wants, comes to hand, is well known; and it often happens that on the receipt of his monthly wage the French artisan purchases some article of furniture, some little domestic luxury of which he may almost be said to stand in need, but the possession of which is by no means compatible with the due discharge of all his obligations; whereas, if his money were received in smaller sums, and at more fre-

quent intervals, he would be saved from such temptations, and compelled to acquire what he wanted by the safer process of steady saving.

We now come to disputes between masters and men, and the mode of settling them; and we must premise that there is a far superior mutual support among all the trades of France than exists in this country. Whether for good or for evil, the French naturally move in masses; and there is a positive difficulty in getting them to believe in the efficacy of individual action, as understood in this country. When Government was less opposed than it is now to combinations, the manner in which the numerous small societies of working men formed themselves into one great federation was a most remarkable evidence of the wonderful French faculty of organisation. These societies were in one respect different from our own—they were officered by men who could have maintained a contest on the principles of labour and capital with the best orators of the tribune; and it is impossible to say to what a height of influence they might have reached, even in the very councils of the state, had not the recent legislation on public meetings tended very seriously to curtail their powers. This has not been produced by one enactment, but by many; and the result has been that combinations among workmen have now entirely altered their character; and that, though there are many benefit societies existing in France, there is no trade society in the sense in which the term is understood here. It is well known, for instance, that to every public banquet in France the police have the right of sending one agent for every twenty guests; then, before any trade meeting whatsoever can take place, a notice has to be forwarded to the Prefect of Police. The leaders in the tailors' strike were fined 500 francs for neglecting to comply with this regulation, to which they were subject, as they met in number over 20; and, when last the carvers in stone and wood revised their rules, they were compelled by the Prefect to agree that in no case should their funds be devoted to the support of strikes. The Government has thus, it will be seen, legislated specially against strikes, in depriving them of two material supports,—funds, and the right of meeting.

It is not to be inferred from this that contributions among workmen for strike purposes are absolutely forbidden, only they are very much discouraged, but it may be asked if the men have no means of making known their grievances and endeavouring to right the balance of accounts between themselves and their masters? In some measure they have, by recourse to the council of Prud'hommes.

The council of Prud'hommes for the settlement of trade disputes and the relations between capital and labour, has existed in one form or other from time immemorial in France. As far back as the years 806 and 810, there was some such council among a body of fishermen at Lyons, and frequent mention of others is made in various parts of French history.

At the beginning of the present century, however, their power, or, at least, their importance had considerably diminished, and in most parts of the country they could only be said to exist in name.

At the revolution of 1848, the want was generally felt of some legislature of labour to discuss the numerous questions then pending between workmen and their employers, and the Prud'hommes societies were

revived and invested with additional and very important powers. On the advent to power of the present Government these powers were nearly all taken away again: the Prud'homme council was retained, but it was reduced to the dimensions of a mere committee of conciliation, and was forbidden all interference with strikes. Before that the decisions of the council in all questions of wages had the force of law, now they are not binding for any sum in excess of two hundred francs, and even for that an appeal lies to the Court of Cassation.

The composition of the Prud'homme Council may be briefly stated thus:—Its members consist of twelve workmen and twelve employers, respectively elected by their own class, with a president and vice-president appointed by the Emperor. In 1848 the council elected its own president, who, by the rules, was one quarter chosen from among the workmen, the other from among the masters. Of the councils thus composed, there are at present in Paris four,—one for metals, one for stuffs, one for chemical productions, and one for divers industries. The subjects with which these councils are competent to deal are strictly limited,—individual disputes between one man and his employer, or between a few men and their employer, for instance, may be brought before them, but in no case are they allowed to decide the larger and more general questions in which vast numbers are engaged on the one side and on the other. They are a species of county court, nothing more; and though certainly of some little use in diminishing the number of petty grievances that, united, very often lead to the most serious differences, they are utterly ineffective, as at present constituted, in all that concerns the larger interests of capital and labour.

In an estimate of the forces which are at the French workman's disposal in the great struggle between capital and labour, we must not forget co-operation, which is probably destined to mould the future of the world more than any other of the great movements at present in progress. Co-operation is much more common in France than in this country, and there its true principle is most clearly seen, and the workman knows how to avoid those temptations held out by a temporary increase of profit, which, in the long run, are sure to prove fatal to co-operative enterprise. He sees clearly that the beginning and end of the movement is the emancipation of labour from the tyranny of capital—and we use the word tyranny in no sense as referring to the personal qualities of capitalists themselves, but only to the inevitable results produced by the management of their capital in the present state of society. It is to be noted, however, that in France co-operation takes a form somewhat different from that in England. That is to say, among ourselves almost the only institutions of the kind that have been founded, or, at least, almost the only one that have proved successful, have been co-operative stores, in which the shareholders are themselves the consumers of the products sold. In France, on the contrary, co-operative trading societies are much more common, that is to say, societies of which the members perform work for the outside public, and which thus enter into the field of general competition. For instance, the most notable society of the kind in England is at Rochdale, and it deals only in groceries, and, indeed, in food generally, and in wearing apparel, all of which are among the wants of the

own shareholders. In France, the pianoforte-makers, and notably the masons, have combined to form large societies, which manufacture pianos and build houses under precisely the same conditions, so far as the purchaser is concerned, as if they were large firms conducted by a capitalist, only the capital required is subscribed by the workmen themselves, its profits are shared amongst them, and one of the fundamental regulations of the society is that no workman shall be employed who is not a shareholder. A similar undertaking was started in England some time since, and it prospered till the shareholders found it impossible to resist the temptation of turning their society into a mere joint-stock company, that is to say, of keeping their numbers stationary although the business increased, and meeting that increase by simply hiring fresh hands, who had no participation whatever in the profits, and were paid at the ordinary labour rate. It is needless to point out that such a course was in direct antagonism to the very first principles of co-operation, and it is not surprising that the short-sighted selfishness which had dictated it ultimately met with its due reward in the utter ruin of the undertaking.

But, in France, as we have already said, such temptation has been resisted, and, consequently, co-operative trading societies flourish in that country, and bid fair to obtain a great extension of prosperity in the future. It is in co-operation, as in every other movement, the first step is the hardest to take—the creation of a capital out of the earnings of workmen who have no more money than suffices to provide the necessities of daily life, must be a slow process, and one requiring the greatest self-denial, faith, and perseverance. When the history of these societies shall come to be written, it will be seen that their founders have displayed higher qualities than are called forth in the senate or in the battle-field. The masons, for instance, agreed for several years to lay by one-tenth of their daily earnings, to form a fund with which to commence business, and this they did in the teeth of poverty and a thousand other discouragements, until their accumulated capital enabled them to take a contract, and from that moment their prosperity began. It was the same with the Pianoforte Makers' Society, which now possesses a large manufactory, where the best pianos are turned out at the market price. It should be stated that there is no disposition whatever on the part of the French public to resist these movements, on the contrary, every possible encouragement is given to them, for it is most clearly seen that by such means, and such means alone, can the workman have a prospect of bettering his position without having recourse to revolutions, those violent convulsions of society, in which both labour and capital are threatened with common ruin.

Along with the co-operative trade societies ought to be mentioned the Society of Credit to Labour, which is, in effect, only the co-operative principle applied to the granting of loans. A capital is subscribed among a certain number of workmen, and of this each in his turn is entitled to a loan, which, with the interest, is paid back by instalments. At the same time, a certain portion of the funds is set apart for other profitable investments. This society, which commenced in the same humble way as those just mentioned, is now embarked on a career of the greatest prosperity, and by its aid thousands of workmen have been

enabled to start in business on their own account. We ought not to forget to mention that the money realised by the operation of the masons' co-operative trade society is apportioned in the following way: two-fifths of it are devoted to the payment of the annual dividend upon capital, and the remaining three-fifths form a bonus for the shareholders.

We shall now briefly consider the French workman from another point of view, namely, that of his domestic or social life, which, after all, is more important than any of the preceding, because it includes the aims and effects of all. However good or bad the institutions under which a man lives may seem if judged by some standard of abstract perfection, the only way of really forming a judgment upon them is to carefully watch their effect upon the man himself. If, in spite of every good reason to the contrary, he persists in being happy, and declaring that his life is enjoyable to him, we may conclude that the institutions are not, after all, so black as they have been painted; therefore, though much may be said against what may be called the external circumstances of the French workman's life, we can only arrive at a knowledge of their real nature by studying them in their effects, namely, his inner life, what kind of man do they form—one happy or miserable, virtuous or vicious?

Is the French workman, on the whole, happier than his brother in England? we think not. It is customary to speak of the gaiety of the Gallic temperament, but there are certain positive misfortunes against which even gaiety is not proof, and of these the French workman has certainly his due share. It is every year becoming more difficult for him to live, under the conditions, that is to say, which make life enjoyable. He cannot economise—the enormous increase in the price of all the necessaries of life—which are quite as dear in the French as in the English cities, while as we have previously shown the rate of wages is considerably below that received in this country, (a man now pays £15 for the rent of a room, which ten years ago he could obtain for £6)—is tending to bring about for him a state of existence, popularly known as living from hand to mouth. So that, though savings banks have been established in most of the principal towns, and their books show a steady increase of contributions, the contributors do not in the main belong exactly to the working class proper, but are gentlemen's servants, small tradesmen, and the like. A mode of life by which a man, however sober, steady, and industrious, cannot lay by a little money for his future necessities, can scarcely be called a happy one. These remarks however are only to be understood as applying to the population of towns; in the country the class of persons who, without being rich, have a decent competence is considerably more numerous than the same class in the provinces of England.

The French workman is naturally a "marrying man," and, if no impediments were in his way, would marry rather early. Some persons, who are only familiar with one phase of French life, and mistake the affected indifference and cynicism on this subject on the part of a few novelists and playwrights for the temper of a nation, may smile at this statement; but it will seem less improbable to them if they reflect that men who work for their living are in all countries the most practical

section of the community, the most simple in their mode of life, and the least liable to be led out of the beaten track of habit and opinion by the glitter of merely eccentric and paradoxical notions, of which we take the notion of marriage common in the more fashionable circles of French society to be one. The French workman would marry early were it not for the terrible conscription, which overrides every natural law with its monstrous and unreasonable demands; he does marry early whenever he is so fortunate as to escape the obligation of military service; he generally lives very happily with his wife; is rarely, however depraved he may be, guilty of the crime of using personal violence to her; spends the greater portion of his leisure in the society of his family, and would hardly think of taking a walk or a trip into the country on a fête-day unless they accompanied him. This practice of Frenchmen of appearing much in public with their wives, is in marked contrast to our own, as, indeed, is the social freedom which women generally enjoy. Across the Channel a woman is much less dependent upon the other sex. Ladies are to be seen in almost as great numbers in the restaurants as gentlemen; and both in public and in private they are treated more as the equals and companions of men than they are in this country. It is not considered necessary to talk specially *at* them; men do them the justice to talk *to* them as freely as if they were talking to their own sex, and do not hesitate to lead the conversation to politics, art, science, or literature, simply because a lady happens to be present.

We have alluded to the restaurant—a word or two on the French workman's mode of taking his meals. The lower class of labourers live much in the same way as our own; they commonly carry some cold provisions from home with them in the morning, or buy a large piece of bread, and make a dinner of that and a piece of cheese, an onion, or a little fruit, and a glass of wine.

In the evening, when work is done, they take their share in the *pot-au-feu*, generally a little savoury stew prepared by the wife against their return. The better class of workmen, that is to say, those who are in receipt of higher wages, and occupy an entirely different position, take their meals at the restaurant, their wives with them, or, more commonly, send out and buy cooked provisions at the restaurant, and eat them at home. This would at first appear a somewhat extravagant way of living, but it must be considered that the principle of co-operation is as sound in its application to the cooking of dinners as to anything else, and such is the enormous price of fuel in Paris (very indifferent coals are sixty shillings a ton, and wood is dearer still) that it is found much more economical to take a dinner from the eating-house keeper, who makes one fire serve for the cooking of many meals, than to kindle a fire simply for the cooking of one meal at home.

Enough has been said elsewhere on the very superior system to our own on which the French eating-houses are conducted, to make any lengthened remarks on this subject necessary here. It is not that a given quantity of food costs very much less in Paris than in London: but one can have a much greater variety of well-cooked dishes for the money; and the list of things to eat is so nicely adjusted to the length of each pocket, that a man may dine for eight-pence, or for six times that

sum, in the same establishment, and in each case get what deserves to be called a dinner. It is this that constitutes the chief excellence of the restaurants. Taken one with another, there is a wonderfully graduated scale of prices in them, unknown here, where there are only two or three classes of public eating-houses; and if you are too poor for the one, you are very properly too dainty for the other. There is the "Trois Frères," for example, where your bill has almost always to be settled with bank-notes; and there is the "Californie," where, eat as much as you like, and as long as you like, you will find great difficulty in spending more than sixpence. "Californie" is one of the monster restaurants for the very poor, for the labourers, street-sweepers, rag-pickers, &c., situated right out by the *Barrière du Maine*, in a remote corner of Paris; and its dimensions strikingly illustrate the French faculty for organisation. The proprietor, living in the midst of a very poor population, had the sense to perceive that if all the little restaurants which supplied their wants were thrown into one, that one could effect a considerable saving in the purchase of fuel, provisions, &c., and could thus afford to sell food cooked at a very slight advance on wholesale prices, and at hardly any advance at all on the retail cost. He tried the experiment, and it succeeded beyond his expectations; in the course of a few years the whole neighbourhood supplied itself from "La Californie," and now as many as 200 persons can dine there at one time. An ox and two barrels of wine, bread, vegetables, &c., in proportion, are consumed every day. It is chiefly owing to "La Californie" that many of the poor of the neighbourhood have abandoned their practice of dining at home, and now take a cheaper meal out of doors. In the evening, when all the long tables, both in the halls and in the garden, are filled, the sight is most picturesque. Every man waits upon himself, and, on entering, walks up to a large semicircular counter, obtains his plate of meat and vegetables (and there are half-a-dozen different kinds of each), a half-litre of wine, and a piece of bread for about 11 sous, 5d. in all. He then has a knife and fork given him, and himself carries his dinner to table. After dinner many take a cup of coffee, which can be had for 2 or 3 sous. Notwithstanding the extraordinary moderation of his charges, the proprietor can afford to be generous to the poor: every morning before seven o'clock a great quantity of broken victuals is given away.

The chief amusements of the French workman were formerly, and, indeed, are now, the dancing-room or the theatre in winter; in summer a walk in the various public gardens of which he is very proud as he has reason to be; or a cup of coffee and chat in the little restaurant. Sometimes, too, he plays a game at billiards. On fête-days he enjoys the same amusements as those provided at fairs in England, as rifle-shooting, penny panoramas, performing dogs, monkeys, &c., &c.; and when out in the country he is very fond of a game something between bowls and skittles, which is played there. It is well-known that he does not get tipsy, he has a reputation for sobriety, and it is well deserved. Nevertheless, he is beginning to take more absinthe than his friends think is good for him, for this stimulant is one of the most deadly that can enter the human body, and though it does not necessarily produce drunkenness, if taken in moderate quantities, it acts with terrible,

swift, and secret effect upon the brain, and the very seat of life. If the truth must be told, he is beginning to find a little too much amusement in gambling; perhaps, after all, he plays more at cards than at any other game, and the money for his losses can only be spared out of his hard earnings by defrauding the body of some of the necessities of life. The Frenchman never indulges, however, in any of the brutal, cruel sports common among our very lowest orders, such as dog-fights, ratting-matches, and so forth; and altogether, it may be said, his amusements are much more worthy of a rational being than those common among the people of this country.

All these amusements are mostly enjoyed on Sunday, on which day the artisan is at work all the morning, and then takes his pleasure the remaining half of the day. He also very often devotes a part or the whole of Monday to amusements, and on that day it is just as hard to get certain classes of the population to work as it is here. Even on secular grounds we cannot help thinking that Sunday labour is a mistake. Man is, after all, only capable of a definite amount of work; and if this be spread over seven days, or six, it will only vary in rate, and not in quantity; for experience shows that a man will have his rest, no matter by what means he obtains it. We have seen that the French workman often compensates for his labour on a Sunday by idleness on Monday; and it is singular that the very classes that in our own country mostly keep away from their labour on the Monday are those whose avocations or whose improvidence compels them to labour on the Sunday. The mechanic who by the regulations of his trade cannot work upon the Sabbath, is rarely found among those who loiter away the next day; but the small jobbing shoemaker and tailor, who are often more employed upon the Sunday than on any other day, are rarely to be found at bench and board on Monday. We hope for the solution of this difficulty from the English rather than from the French side of the Channel. At the same time, in our observance of the Sabbath, even as a day of rest, we might borrow a hint or two from our neighbours. On that day they have free access to every museum and picture gallery of their metropolis, and why should not we?

The excellence of the French charities for the cure of sickness and the alleviation of distress, is so well known that we need not do more than allude to them here. In this, as in other things on which we have had occasion to comment, the thoroughness of French administrative ability is very conspicuous. It is not that more money is spent on such purposes in France than in England, but that it is wisely spent. In the first place, care is taken that no good work shall languish through the failure of private benevolence, for certain taxes are paid to the State expressly that it may subsidize charities in need of aid; no case of distress can escape the vigilance of the police; every person found without visible means of obtaining a livelihood, is bound to give an account of himself, and is at once provided for; either licensed to beg, if he is crippled and cannot work at a trade, or directed to a place where he may obtain work if he is able to do it, and if he is not, and is not in a condition to beg, at once found admission to one of the numerous hospitals that receive Government aid. It must

be added that the license to beg is given to but very few, and to only the most deserving cases, so that there are not many destitute people to be met with in the streets, and no suspicion of the genuineness of cases need check the flow of charity. Such odd contests as sometimes came between the officers of one union and another, in England, each disclaiming his obligation to take charge of a particular pauper, are unheard of in France. We may add that, in its care for the poor, the French police almost compensates for many of the faults it undoubtedly possesses. Under its vigilant supervision the haunts of misery, vice, and disease, which are a shame to most of our principal cities, are not allowed to exist in the cities of France, nor is the public of that country from time to time shocked with accounts of persons dying of starvation after months of penury and utter neglect on the part of the authorities. The indifference of our own police in these matters is a twofold evil, it gives impunity to idle scoundrels who abuse the public benevolence, while it prevents cases of real distress from meeting with the attention they deserve.

We have now finished our brief survey of the condition of the working classes of France, and it is no part of our duty to dictate the conclusions that are to be drawn from it. We may say, however, that on a comparison of the condition of those classes with that of our own, it seems that the differences and resemblances are precisely those which exist between the two peoples in their entirety. There are perhaps fewer men very prosperous among the French working classes, but on the other hand there are fewer very miserable. Extremes are not so apparent in the condition of any class across the Channel as they are here. England can always produce the brightest examples of extraordinary prosperity; France of equal and generally diffused happiness. Perhaps England may one day learn that the welfare of a whole people is an aim superior to the spread of exceptional advantages among any of its parts.

PART II.



REPORTS BY ARTISANS

FROM

BIRMINGHAM.

INTRODUCTORY REPORT.

BY MR. W. C. AITKEN,

BIRMINGHAM.

HALF a century ago a distinguished English writer in comparing the skill and industry of France and England, as displayed by the works of the former nation in one of the then recent exhibitions held in Paris, says, "The very exhibition of the products of French industry for the present year shows how little the comforts of the people have been attended to in comparison with the luxuries of the great, how little the spirit of solidity and utility has gained over the national taste for frivolous ingenuity, and how much greater their wish is to dazzle than instruct;" and he adds, "No body of British manufacturers, we are persuaded, would submit to be actors in such a theatrical pageant." These paragraphs are introduced in order to contrast with the industry of France, as exemplified in the Exhibition which has just closed, and with the fact that British manufacturers have, and do now take a part in "such theatrical pageants;" while French industry, still to a great extent by the skill and taste of its artisans, is in a proportionately increased degree calculated to minister to the luxuries of the great, it has advanced in so far as that it does now embrace the production of articles which minister to the comforts of the people, and it has made rapid progress in the production of articles solid and useful. If "French industry still dazzles," it now also "instructs," and it shows us that the nation which can, and has achieved the highest summit of æsthetic excellence as shown in things ornamental, is gradually advancing upon us in the production of things useful and substantial.

That there is an amount of assimilative power in French and continental industry, the Exhibition of the present year amply demonstrated. It may be questioned whether English manufacturers and artisans observed as narrowly, minutely, and painstakingly in the Exhibitions held in the years 1851 and 1862 in England, the exhibits of foreign contributors, as did the latter

those of England : that good use was made of the occasions alluded to, a survey of the contents of the Paris Exhibition is a demonstration and a proof which admit of no discussion ; and the advance made is in the direction of that in which our country has hitherto been strongest, i.e. in the production of utilities, and of partially converted raw material. In all probability, wrapt up in the real and traditional excellence of English manufactures, we have permitted continental nations gradually to steal a march upon us, our nationality has blinded us to the rapid advances being made, and making by other countries than our own. The paternal care, the desire for encouraging the advance of manufactures in foreign countries and states, is shown by the earnestness with which they encourage art and technical instruction among their artisan populations. This was singularly displayed in their sending many of their skilled artisans to examine and report on the works exhibited in the Exhibitions of 1851 and 1862, and there is abundant reason for supposing that such visits made by intelligent artisans have not been without their effect on the manufactures of the countries from which these artisans were sent ; in the exhibits of France and Germany I think this might be observed, particularly in the former. However much the influence of critics who can discriminate and point out excellences and defects may operate, yet to the artisan must be left the realization of improvements ; familiarly acquainted by long experience with the manipulatory processes in their various specialities in manufactures, and quick to detect differences, they are consequently peculiarly fitted as observers, and though their descriptive powers may be limited, they rarely fail to make themselves understood. It was, probably, the recognition of their fitness which induced in the early part of the present year, the Society of Arts to originate and promote a scheme which would enable a certain number of foremen and skilled artisans to visit the French International Exhibition at Paris, in which visit twenty-five Birmingham artisans participated.

In originating this important movement great credit is due to the Society of Arts, who, for upwards of a century, has taken a leading and prominent part in the encouragement of art and industry in England and her colonies. To the Society of Arts many of England's greatest sculptors and painters owe their earliest teachings ; the walls of its theatre afforded the enthusiastic Barry the means of entering his protest against the then state of art in England, in a series of pictures illustrative of the intentions of the Society under whose auspices he did his self-imposed labour. Its influence has led to very important improvements in the cultivation of the soil and the implements of husbandry. In metallurgy and chemistry equally important results have followed, and many new materials on which industry now

operates were introduced into this country through its instrumentality. In manufactures its influence has been equally potent. To it is due the realisation of the first of International Exhibitions. Unwillingly I pass over with a simple allusion its efforts to help the artisan as regards a better system of general and technical education, and its system of prizes for the encouragement of art workmen, as well as many other movements of a similar character.

The history of the visit of the Birmingham artisans to Paris is as follows:—

In order to give effect to their scheme, the Council of the Society of Arts, at an early period in the present year, contributed from its funds the sum of one hundred guineas, and addressed circulars to the several Chambers of Commerce in the country, asking their influence, co-operation, and pecuniary assistance, to help in the realisation of their project. A circular having been addressed to and received by the Birmingham Chamber, at the request of the Chairman, I attended a meeting of the Committee of the Chamber on the 25th of April last, and explained fully the nature and intention of the scheme, which was approved of unanimously by the Committee of the Chamber, who issued a circular, earnestly asking the pecuniary assistance of members of the Chamber and the manufacturers of the town, "believing it to be of the highest importance that the opportunity now afforded, by which the workmen of the town may be made acquainted with the productions of continental manufacturers, should not be lost."

The amount of the fund realised over the whole country, including 500% contributed by Her Majesty's Government, amounted to 1,039*l.* 19*s.* 6*d.*; of this nearly 140% was raised by the exertions of the Birmingham Chamber.

I consider no small share of the success attending the realisation and working out of the visit, due to the appointment of a most energetic Sub-Committee appointed by the Birmingham Chamber, consisting of Messrs. J. B. Browett, E. Peyton, W. H. M. Blews, with Mr. J. S. Wright as chairman, with whom I had the pleasure of co-operating.

The branches of manufacture to be reported upon having been arranged, in order to secure a proper selection of artisans, advertisements were inserted in the Birmingham newspapers, requesting applications from artisans competent to undertake the duties of reporting, whose practical skill, knowledge, and powers of observation would enable them to detect the peculiarities in the manufactures selected.

Eighty-one applications were received.

The number of artisans, &c., sent from Birmingham, whose expenses were defrayed by the Society of Arts, was twenty-three. In addition, two were sent as Associates, their expenses

being defrayed by their employer, the Society of Arts accrediting them with the necessary introductions enabling them to participate in the visits to manufactories, and other advantages the scheme afforded.

The names of the Birmingham foremen and artisans selected will be found in the table of contents at the beginning of this volume.

In addition to the general instructions issued by the Society of Arts, the Birmingham Sub-Committee issued a printed paper to each artisan, with useful hints for his guidance.

Arrangements were made by the Birmingham Sub-Committee with the London and North-Western Railway Company, for through transit, and the representatives selected left for Paris on the 31st of August, arriving there on the morning of September 1st. The party was met in Paris by the representative connected with the British Workmen's Hall (Mr. Glazier), whose duty it was to provide accommodation, &c., for English artisans visiting the Exhibition. By his aid, those who had not previously acquainted themselves with where to procure lodgings were provided therewith.

On Monday, the 2nd, the representatives entered the Exhibition, found their way to the British Workmen's Hall, and to the accredited officer of the British Commission (Mons. Haussoullier), received from him a copy of an English and French vocabulary; a ticket was also presented for admission to the Workmen's Hall, and to enable each to claim the assistance of a guide when visiting the manufactories open for inspection. The Hall afforded a place for the meetings of the Birmingham representatives in the morning and evening. These meetings were important—affording the opportunity for resolving doubts, and pointing out the *locale* of objects to be examined, or of those which had escaped notice.

The real work of the representatives was commenced by their entering the Exhibition building, each finding out the group, and then the class of articles he was specially selected to examine, and report upon, a difficulty by no means easily overcome on a first visit.

I am of opinion that next to, if not even of more importance than, the visits to the Exhibition, were the facilities afforded for visiting the manufactories in Paris. These visits enabled our artisans to see and judge for themselves as to the conditions under which labour was conducted in France, the internal appearance of the manufactories, and certain obvious differences in arrangement, processes, and tools used; it affords me the greatest possible pleasure to record that in every instance in which a visit was paid the artisans were received with courtesy, the utmost attention being paid to them by the principal in many instances, and intelligent superintendents in others, who conducted them over the works. Where questions were asked answers were freely given: the results

of these visits will be found recorded in several of the Reports. The establishments visited were chiefly those which have achieved celebrity by the excellence of their productions.

It is matter for regret that every influence failed to secure permission to get access to the various Glass Works in Paris; equally so to establishments engaged in the manufacture of buttons. These failures arose only where success was impossible, and did not arise from any lack of energy or perseverance on the part of Mons. Haussoullier, who aided the English artisans in gaining access to the various manufactories.

Allusion has been made to a series of reports which were drawn up on the English International Exhibitions of 1851 and 1862 by French artisans, and presented by them to their Government, who facilitated their visits, but the circumstances under which these reports were drawn up, make them differ essentially from those written by the Birmingham artisans. The former reports were generally the production of a group of selected workmen from each branch of industry reported upon, whereas each of the reports appended, it should be *distinctly* understood, expresses the opinion only of the individual reporter, whose name precedes the Report. It is very gratifying to remark how closely the schedule of instructions issued has been followed, and where reporters have not done so, circumstances have generally interfered to prevent them.

In addition to the Reports of the artisans selected by the Birmingham Chamber, Supplementary Reports have been contributed by Mr. J. L. Petit on steel pens, by Mr. S. Wall Richards on buttons, and by Mr. T. C. Barnes on table and ornamental glass.

The Reports from the group of foremen and skilled workmen nominated by the Birmingham Chamber of Commerce, embrace no fewer than twenty-two distinct branches of local industry, on each of which a greater or less amount of information has been received. Other seats of manufacture have a few leading trades, in the cultivation of which they concentrate all their energies; Birmingham, on the contrary, is the head and centre of multifarious industries in many and diverse materials, to be made acquainted with the true and present condition of each of which, as displayed by the various countries exhibiting, with any improvements which may have been recently introduced, is important both nationally and locally.

I will abstain from any special comments on the Reports, but will leave them to speak for themselves.

SCHOOLS OF DESIGN.

The subject of Design is an extensive one, and one in which the future success of Birmingham, and the prosperity of England

is involved, respecting the necessity for the improvement in which there can be no two opinions. The Exhibition showed that Continental nations, particularly France, are in advance of us.

In the report of F. Jackson (originally a student of the local School of Art, a designer, engaged in one of the leading manufactories connected with the electro-plate trade, an artist, and a teacher of art), he says that after an earnest and careful examination of the results of the French system of teaching drawing, as displayed in folios of drawings by the pupils of French schools, shown in the Exhibition, he comes to the conclusion that the French schools are really schools of practical art. "There is no over-anxiety for fineness of outline, while, in shading, the readiest method (*i.e.* the use of the stump) is adopted. More importance is attached to the realization of form, less to the mere manipulation. In our schools (English), on the contrary, an immense amount of labour is spent upon fineness of outline and mechanical finish. In this respect we are in error; in fact, we begin at the wrong end." Other reporters, for instance, Deeley and Moore, both at the time students of the local School of Art, express similar opinions. The large quantities of "Dyce's outline"* administered to the students, in all probability, have materially operated in checking the desire to learn drawing. The system, therefore, of the French schools might probably be adopted with advantage and profit. It will be seen by reference to the several reports which follow that there is a strong impression that art teaching should be increased and accelerated if possible.

There are, however, other influences at work equally powerful, calculated to operate against the development of design, as applied to manufactures locally, that is, the total want of objects of beauty to refer to, to consult, to examine, and thus stimulate the imaginative faculty. Most of the reporters refer to the influence the aspect of Paris exercised on them, and the influence it must exercise upon the French people. Another influence also exists which, in all probability, operates very potently, *viz.*, the magnificent national collections of objects and authorities for consultation to be found in and around Paris, in the Louvre, the Hotel Cluny, Ecole des Beaux Arts, at Versailles, and at Fontainebleau. Applied art may be seen at the Gobelins and Sèvres; other collections there are, at all times accessible; and the careful observer will find successfully applied, in realized works, suggestions which have been culled from the contents of these treasure-houses, the

* It is not by this intended to deny the necessity for the well grounding of students in drawing, but simply to suggest that this may be overdone, and frequently is. When a moderate amount of correctness, and facility of execution are acquired by the student, is this recognised, and are copies of a more advanced kind, likely to forward the student in his studies, immediately placed before him?

repositories of objects collected by a long race of French monarchs, not only of the Empire, but of the Realms of Taste. On this subject I was well convinced on a visit paid to Paris in 1849; and confirmatory evidence will be found in the able report on the furniture and decoration exhibited in the Paris Exhibition of 1855 by Mr. Digby Wyatt, architect, one of the earliest and most earnest advocates of art education in England, whose able treatise on Metal Working is invaluable. As regards the influences of art collections, he writes as follows:—

“When we consider how sadly unmindful we have been for the last three generations of national education, artistic and industrial, how can we wonder that such defects should make themselves apparent when we publicly enter the lists with other countries, whose more parental governments have opened free schools for workmen, free public libraries, free museums, and other institutions, open to artisans on days and at times when their habits and means enable them to avail themselves of the opportunities offered for self-improvement? Deprive the Parisian workman of access to the Louvre, the Hôtel Cluny, Sèvres, the Gobelins, Versailles, the Luxembourg, the Jardin des Plantes, the Ecoles Communales, &c., on his ‘Dimanche,’ and to expect him still to be an artist, would be madness. Shut up the Bau-schule, Museums, Industrie Gebaude, and public libraries of the German capitals, and away would go that interest in his craft which every German ‘bursch’ now takes. If we would elevate the English workman, we must recognise some other stimulant to his energies than beer; we must provide museums for him, *where he may see what others have done before him, and better than he in his own trade*; we must get some free libraries,* where he may be able to go and improve himself; we must put some better and more ideal monuments than we already have into our public streets, spending more money upon their art, and less upon the quantity of materials of which they are made. We must, in short, educate his eye, and, through his eye, his mind, by giving him access to the best models of fine and industrial art.”

It is true we have the South Kensington Museum, by far the most *completely systematic* collection for the purposes intended that exists in the world; but of what real value is it to us? Nationally, it is invaluable; locally, at present, it is not.† The

* Birmingham has now four Free Libraries, and a truly noble Reference Library, in which, among other books, there is a very grand collection of illustrated works treating on ornament and ornamental art. That these are constantly being referred to by designers and artisans, &c., is matter for congratulation. Still, it must be remembered that no representation on paper, *however perfect*, will quite realize the detail, or do more than indicate the manipulative processes involved in the execution of the object represented. It is that deficiency which renders Museums of Art objects so valuable in a manufacturing town.

† The travelling collection of objects sent from South Kensington, which has been sent out to 56 towns in the United Kingdom since its first visit to Birmingham, in 1855, is, no doubt, useful. Such, however, can only be considered a mere make-shift; art objects, to be useful, must be permanently placed in a local museum. Let Members of Parliament see that the grant passed in July, 1867, for the purchase of objects in the Paris Exhibition is used for the purpose it was asked—viz., to help to purchase objects for local

artisan engaged in Birmingham cannot refer to its unique examples; whereas, if examples of a similar character were distributed among the great seats of manufactures in England, according to their specialities, they would be practically and permanently useful, in elevating the artistic character of our metallic, ceramic, and textile productions.

A careful inspection of the Paris Exhibition leads me to the conclusion that the deficiency in the manufactures of England is rather that of art, than of scientific, technical, or manipulative skill, and that the time has come when in Parliament, at the first opportunity which presents itself, on the grant for educational purposes being proposed, some provision should be made for including in that grant, means for the purpose of instituting local museums of art manufactures in the great centres of manufacture of this land.

**LABOUR.—WAGES.—THE FRENCH ARTISAN AT WORK.—
MANUFACTORIES AND CLUBS, ETC.**

Throughout the various Reports will be found allusions to the wages of labour in France. These are invariably lower than in England. Did this refer only to ordinary workmen some explanation might be found, but when we find that it is so with artisans engaged in the most delicate workmanship, involving the highest manipulative skill (not only skill but mind), the disadvantage at which England is placed becomes very apparent. If we refer, for example, to the bronze works of Paris, where an inspection reveals the most exquisite workmanship—(such work as in this country commands the highest wages in the market of labour)—in it we find the wages range from 4s. 2d. to 6s. 8d. per day, five only realise 12s. 6d. per day; in the jewellery trade, from 3s. 4d. to 5s. per day, and in eighteen cases only is the sum of 12s. 6d. realised. Compare this with the elaborate, delicate, nay exquisite character of the work produced,* and the difference of the wages of labour between the workmen of the two countries is clearly shown. As regards expedition in workmanship, in ordinary trades, the balance is decidedly in favour of the English workman; the rate at which French artisans work, when paid by the day, is leisurely; when paid by the piece their rapidity of execution leaves nothing to be desired. As to the hours of work, these are similar to our own—viz., twelve hours, from six to six o'clock in summer, and from seven to seven o'clock in winter; within that time one

museums. Mr. Cole pointed out the value of the Castellani collection to the jewellers of Birmingham. Let us see, therefore, that it reaches the *loculi* of a manufacture which it will so much benefit.

* "For one artisan who can chase a human hand in bronze, in England, there are fifty in Paris." See Mr. Cole's Report on purchases from the Paris Exhibition, 1867.

or two hours for meals is allowed : the working time varies, therefore, from ten to eleven hours ; the former appears to be the rule in the case of manufactures of a high class, as gold and silver workers, bronze workers, &c., the latter in manufactures of an inferior kind. It should also be understood that the wages in country districts where manufactures are carried on are very much lower. In Paris the wages are on the advance, in several trades there has been a considerable advance recently ; the tendency is upwards. The amount of juvenile labour employed in French workshops is very much below what we are accustomed to see in Birmingham, as regards both boys and girls. To English eyes the practice of smoking, generally indulged in by the workmen, even in the presence of the employers, unchecked, formed a peculiar feature. On inquiry as to this, the answer given was, "When they smoke they do not talk ; we prefer the former to the latter evil, which does interfere with work." Many of the leading manufactories visited were worthy of imitation ; their arrangement and cleanliness were attractive features ; frequently they were built in squares, in the centre of which was a lawn, with trees, flowers, and other objects pleasant and refreshing for the workmen to look out upon. In my experience I have rarely seen better tools in English workshops ; the lathes, and appliances for enamelling in the establishment of M. Barbédienne were perfect ; equally so as regards the lathes, &c., in that of M. Christoffe ; exceptionally, however, the reverse of the picture will be found in some of the reports. Sunday labour, unfortunately, is the rule, rather than the exception. As to the attendance of the workmen, my inquiry resulted in being informed that their attendance was not irregular ; in many manufactories absence is visited by a fine, which is deposited in the box of the sick society in connection with the works. When workmen are absent the time is not spent in dissipation, but in the country, or in visiting the art collections, &c., with which Paris abounds. Community of labour partnerships are on the increase. Trade societies are not numerous, they are discouraged by the French Government ; but benefit societies are common, in connection with many trades. I am indebted to a French correspondent intimately acquainted with the usages of his artisan countrymen for the following particulars in reference to the topics alluded to. He writes :—

"As to trades' unions, I cannot say much about them. The printers, hat makers, and house carpenters have such, nearly like yours, but it is against the law in France. Legally, they are incorporated as benefit societies ; in case of sickness of any member they pay him openly a daily compensation, the doctor's fees, at a reduced rate, and cost of medicines, in return for a monthly contribution of two francs ; and in the three trades named, to support strikes, or indemnify the members in case of stoppage of work during a certain number of weeks, they pay one penny or more every week, but no trace of this payment is found on the society's books. In other trades they provide only for their sick members, and nothing more."

Recent improvements in Paris, while they have added to the magnificence of the city, have materially inconvenienced the workmen, and increased the rent of houses; they are compelled to live at a distance from the manufactories where they work; tenements which from three to five years ago were let for 5*l.* now realise 17*l.* 10*s.*; provisions are proportionably dear, and a diet of by no means so strengthening a kind as that upon which our countrymen are fed is necessarily adopted by French artisans; but where animal food is used, a system of cookery, in which every Frenchman is an adept, makes a small quantity go a long way, and when associated with vegetables and flavoured with condiments, provides a wholesome and somewhat *piquant* if not substantial repast, and associated with "vin ordinaire," or coffee, is the kind of diet which satisfies the appetite of the "ouvriers" of Paris.

THE FRENCH ARTISAN, HIS HABITS, AMUSEMENTS, EDUCATION,
AND MORALS.

As such materially operate on French character, even on the manufacturing life of the artisan in France, an allusion to the subjects which form the heading of this paragraph is required. In France, respect, and exemplary deference to the aged, love and tender care of the young, are features which distinguish the artisan. Sobriety may be said to be the rule, though it is admitted that drinking is indulged in; how far the impulse to this habit may have been increased recently by the use of the new stimulant, "Absinthe," and the "Pal All" of Burton (which has become, since the Exhibition opened, a favourite drink), I am not in a position to state. Indulgence in the former has, however, in one benefit society in Paris, led to the death of four of its members within a very limited space of time (my information was received from the secretary of the society). It may be suggested, as a singular subject for psychological inquiry in coming years (if the two stimulants named increase in consumption in France), whether the mental characteristics of the artisan class in France, have not suffered by the substitution of these intoxicating drinks, for the light wines which gently exhilarate, without intoxicating the present generation, imparting to them their vivacity, and increasing their appreciation of the beautiful in art, aiding their executive power in the delicate manipulatory processes for which they are at present deservedly celebrated. It is satisfactory, however, to know that the habit of drinking is chiefly indulged in by bachelors.

As in the days when the "Traveller" wandered by the Loire, France is still "the gay festive land, of mirth and social ease." The dance, the theatre, the fête, are their pastimes; their more serious amusements consist in attending free lectures, and libraries, wandering among, and visiting the interior of the public buildings, and museums, in and around Paris, from the contents of which they

glean hints which they apply in their daily work. Attendance at the various Schools of Drawing, &c., educates their taste, and their facility for realising their conceptions, is increased thereby. It is evident, also, that the value of education is appreciated; "the increase of primary education has improved the morals of the community." I quote this on the authority of a valued French correspondent, whose earnest attention to the social conditions under which the Parisian artisans exist, renders his testimony of great value. He writes me as follows:—

"Some are addicted to drinking, most generally, unmarried men, although not to the extent it is carried in England; some have a glass of beer, or of wine, and play a game at cards, dominoes, or billiards; some dance in balls, or such public places, where they take their wives; some go to the play; some make parties in the neighbourhood of Paris; these are mostly the amusements on the Sundays, or fête days. On their working days, in the evening, some when married go home, have their supper, and read their newspapers, or go to free evening lectures, which are numerous, and may be found in every parish (quartier) of the town; if bachelors, they sup at eating-houses, and either go home, or call upon a friend to have a bit of chat, or go to free evening lectures. On Sunday, in winter, or if the weather is wet, you will meet many strolling into the free library, or any other public building, where they amuse themselves by looking on, and where they pick up a bit of information, and of taste *this is the indirect education which acts in such a wonderful manner upon the French in general.* It is far better for the workman to go to Versailles, see pictures, statues, or works of art, which makes them anxious of knowing what they mean, than staying in beershops or gin palaces under pretence that it is wanting of respect to—to go about and amuse oneself out of doors. Most of the artisans can read and write, and they have so well understood the advantages of education, that *there are very few boys to be met with who cannot read and write.* As to the morals, upon the whole they are good, *the increase of primary education has improved the morals of the community,* and I would add, the greatest amount of morality is to be found in the higher class of artisans, and in the lower classes of the bourgeoisie; the lowest classes are immoral for want of education."

From the above it will be seen how much the character of the French artisan is influenced by external surroundings, how even his very amusements, and the employment of his hours of ease, operate in developing his taste, and aiding his executive power, as displayed in the work of his hands. In the higher branches of manufacture, his work is a labour of love; his mind is stored with vivid recollections of what those did before him, who were engaged in his craft; he desires to excel, and in the majority of instances he does; unless mind and hand worked together, this could not be, but it is that which in so peculiar a degree distinguishes the labour of French artisans, engaged in the production of works of high class and of an æsthetic kind. Would that the same feelings animated more generally the artisans of our own land, then no more need we call in to aid in our industrial triumphs, foreign skill and taste. I regret this, but I state it as an incentive to increased exertions on the part of my countrymen; in them I have faith; what man can do they can, and will, in coming time.

It is to be hoped that the impressions gathered in the Exhibition at Paris will not pass away unheeded. If the occasion is not improved, unnecessary and valueless were the British artisans' visits to Paris.

The conclusion I have arrived at is, that English manufactures have suffered from lack of sufficient representation; that in the useful and substantial England holds her place; but in ornamental art as applied to manufactures she is behind. Still, even in the "substantial," I see the necessity for increased exertion, for other nations are making rapid strides in this direction; the whole face of French industry is changed, has advanced, and is rapidly advancing. It has been my lot to visit three French Exhibitions—those of 1849, 1855, and 1867, and at every succeeding Exhibition I have marked her progress. Other nations, as Prussia, Belgium, Austria, and even the small States of the Zollverein, show signs of increased industrial activity; they have earnestly set to work, and the effect of a rising population, educated in their trade, technical, and other schools, is no doubt operating to their advantage in their industrial progress; and this element of technical education most certainly *should*, and *must* become very soon with us a matter for very serious consideration. Abundance of raw material is of little value to an only semi-educated people; it affords but a feeble barrier when opposed to intelligence.

SCIENTIFIC AND TECHNICAL INSTRUCTION.

In stating that it appeared to me, that the most apparent deficiency in English manufacture was rather that of art than of scientific, technical or manipulative skill, I consider, nevertheless, that scientific and technical instruction must be attended to, in an equal degree, and as a matter of necessity. If it is admitted "that a greater number of new and successful combinations, have been made by foreigners during the last ten years, than by the people of this country," and if "our trade suffers from want of art education, as is generally thought by those who understand the matter," it is time that we bestir ourselves, cast from around us the mantle of egotism, in which we have hitherto been enveloped, tear from our eyes the delusive spectacles which exalted everything English, and diminished everything which was not. Industry formerly, unaffected by foreign rivalry, contended only with small producers of its own nation, and then the competition was small. But free trade has thrown down the barriers, and the world is now one mighty universal market. To be successful in this competition, our nation (England) must therefore put forward all its energies to educate, in technical and other schools, the present and coming generations; this was anticipated, and was clearly seen. Humboldt many years ago foresaw and predicted, that the

time was not far distant, when science and manipulative skill must be wedded together, "that national wealth, and the increasing prosperity of nations, must be based on an enlightened employment of natural products and forces." Justus Liebig said, "the nation most quickly promoting the intellectual development of its industrial population must advance, as surely as the country neglecting it, must inevitably retrograde." Peel saw this, and uttered the memorable words, "If we are inferior in skill, knowledge, and intelligence, or general knowledge, to the manufacturers of other countries, the increased facilities of intercourse will result in transferring the demand from us to others;" and England's noblest Prince foresaw in International Exhibitions (which he was the first to inaugurate) the coming activity in things industrial, and in order to provide for the coming competition, he inaugurated ere his lamented death, a system of industrial education.

The present Exhibition has abundantly demonstrated the activity of Trade Schools on the Continent. This is proved by the works exhibited by the students of these schools, models produced therein by the students, and various appliances for teaching, of a very much more complete character, and very much more economical, as regards cost, than any produced in England up to the present time.

In helping out technical instruction, reference to objects and illustrations is of the utmost importance; this suggests the necessity for Trade Industrial Museums.

In France, Prussia, Saxony, and the small State of Wurtemberg, &c., Trade Schools, in addition to others of a higher class, are in existence, and furnish the connecting link between the man of science who discovers, and the superintendent who is the medium, and who, educated in these schools, aids by his instruction and advice, the workman in bringing into visible shape the discovery of the man of science, rendering practically useful that which existed as an idea only. If, then, industrial and technical training has benefited other countries and States, in their industrial progress (which no doubt it has), it becomes the duty of every Englishman to see to this important point.

If we fail in taking advantage of the lesson taught us by the Exhibition, viz., that great progress has been, and is being made by other countries, through artistic and industrial training; and if we neglect so to educate and train, it may truly be said of us, "Miserable is that nation which, after this Exhibition, comprehends not the necessity for progress."

CONCLUSION.

I have already stated that there are no evidences of any decadence whatever in the manufactures of England, as shown in

the French International Exhibition just closed, as has been stated (in some directions there are distinct evidences of advance), and that we have suffered from the imperfect representation of many of our most important manufactures, arising from cost of carriage, indifference of manufacturers, and inadequate space; the latter a want which the exhibitors of every country must suffer from, save those of that in which the Exhibition is held. If in those graces of art which adorn manufactures we are inferior, let us not forget that any really national effort towards art-teaching is but of some thirty years' standing, and much progress in any special direction in a nation, cannot be made within so limited a period; the progress already made induces us to ask whether that progress cannot be accelerated, and whether the present methods of teaching art, so far as drawing is concerned, cannot be improved upon; concurrent opinions say that they can, let us see that they are.

Great as are our inventive skill and manipulative excellence, those elements of our national greatness may be increased by scientific and technical training. A Science Department has been in existence for sixteen years, let us also try to render it more efficient, and more generally useful than it is at present. I am not of the number who believe, that the elevation of a nation in either art or science, is the work of one generation of men, it is the result of, and the accumulated persistence in, a given direction by many succeeding generations, each taking up and carrying forward the work where they found it. Any great work, whether mental or material, necessarily "moves but slowly, creeping on from point to point;" generations are gathered to their fathers, but each succeeding generation (in an advancing country like our own) is in advance of that which preceded it; "the thoughts of men are widened with the process of the suns." Let us then be true and earnest in our desire to see that in England, art and science teachings are earnestly persisted in, skilfully administered through able and eminent men, and great as England has been in the past, in her manufactures, with increased means for the diffusion of general and technical education among her artisans, and her juvenile population at work in factories, we are entitled to anticipate in the coming future an increased measure of success, and to hope "what we have done is but the earnest of the things that we will do."

I desire to express my obligations and thanks to many who have aided the Birmingham Artisans, in their visit to Paris; especially to the Society of Arts, and its officers, who, in addition to other facilities afforded, and assistance rendered, aided the artisans in London while intransit to Paris; to Her Majesty's Commissioners, and especially to Mr. Henry Cole, for his courtesy in affording assistance; to him, I think, is due the idea of the Workman's Hall.

In Paris, the assistance of Mons. Haussoullier was invaluable, particularly in reference to the visits to manufactories; nor must Mons. Fouché, the interpreter, specially appointed by the Society of Arts, a most intelligent and courteous pioneer in the visits paid to the workshops of Paris, be overlooked; and the personal kindness of Mr. Glazier, in his attention to the comforts of the party should not pass unnoticed.

To the foremen and artisans who accompanied me, I also return my thanks, and bear testimony to the earnestness with which they did the work assigned them; and how, after the excitement of the visit was over, they set themselves down at home, and wrote out the Reports which follow. The ideas originated in Paris, and the results of their examination of the contents of the Exhibition, will, I feel assured, not be lost on the industries in which they are severally engaged, while the honour conferred upon them, will, I trust, be an incentive to guide and animate their future lives.

*Mayfield, Heathfield-road, Handsworth, Birmingham,
December, 1867.*



ARTISANS' REPORTS

ON THE

PARIS UNIVERSAL EXHIBITION OF 1867.

GAS-FITTINGS AND CHANDELIERS.

By JAMES TAYLOR,

PRACTICAL FOREMAN OF GAS-FITTINGS MANUFACTORY, BIRMINGHAM.

HAVING been selected to report on gas-fittings, chandeliers, &c., I beg respectfully to submit my report, commencing with the exhibits of

A. Lacarrière, Son, and Co., Paris.—The largest makers in the gas-fitting trade in Paris. I examined well the work both in the Exhibition and in their manufactory; I find it extraordinarily heavy, both in brass and in zinc. The brass is badly cast, and is chased all over; the arms of the chandeliers are cast solid, with a strong tube up the centre; the cocks are made before soldering in the tubes, these are then bent in iron stocks and laid in the moulds, and the metal is run round them. The brass is very common indeed, it is seldom lacquered, but when it is lacquered, it is of a deep gold colour; it is generally gilt when the lamps are all bright, but in a great many instances they are intermixed with steel-bronze and other bronzes. In my opinion they look better in steel, and bright, than any other bronze. In almost all cases where the bronze is introduced, it is always in zinc; of course it is not so expensive. I find the fittings made at this manufactory are heavy, and badly finished. The bronzes are beautifully got up; I could not find out how it was done; they did not seem agreeable for me to go into the bronzing-shop at all. The workmen were closely packed together in very dirty shops. There are no boys at all in this factory. The men do lad's work for about three and a-half francs to five francs a-day, but the general workmen receive from five to eight francs a-day. The hours of work are about the same as our own, with the exception of dinner, at which there seems no regularity. They seem to be mostly day workers.

F. Barbédienne, Paris.—No. 43, Class XXII.—This manufactory consists chiefly of works of art, of all shades in bronze and gilt. Some of the designs are really beautiful, and the colours are very rich. The manager of this place, who is an Englishman, as are also several of the

principal workmen, showed me a pair of candelabras of original design; they were of most elegant workmanship; he told me one of them cost more than eighty guineas for repairing and chasing alone. They were to me the grandest sight I saw in all Paris. The manager himself told me that they were perfect in every respect. This is a large manufactory, and we were taken through every department from the sculptor's rooms to the finisher's.

There were about eighty casters, and somewhere about two hundred dressers; there were from forty to fifty enamellers and bronzers; the whole manufactory consisted of about four hundred and eighty persons. There were but few boys. The shops were large, and very clean; there was plenty of room for each one to work. There were places made on purpose for the men to wash themselves, and large cupboards for their clothes. This seemed to be one of the most complete manufactories I saw in Paris.

Renauld, Paris.—No 57, Class XXIV.—The work of this firm was very heavy. Some of the hanging lamps are of a new description; they consist of a chandelier and a vestibule in one; the vestibule slides out of the centre of the chandelier. They seemed to be of general use in Paris, for all the chandeliers are stiff; and where they want a light to be lower, the centre lamp is drawn down; but this centre lamp is only occasionally used. The work is well chased and finished, both in gilt and bronze. In some of the larger chandeliers they introduce a deal of different coloured glass, which has a very gaudy appearance. Where the work is lacquered, it is very pale.

P. Descole, Paris.—No. 46, Class XXIV.—The work of this firm is heavy; it consists mostly of stands for windows, counters or halls; they are formed of figures, birds, and reptiles; they make a beautiful ornament, or they are suitable for burning gas. The work is all well finished, and chiefly in different coloured bronzes.

D. Robert, Paris.—No. 42, Class XXIV.—All the work of this firm is zinc, in different coloured bronzes, and in gilt. It is massive-looking work, forming statues for halls, windows, &c., made for the burning of gas. It is well got up, and it looks equal to the original bronze work.

Gagneau, Paris.—No. 54, Class XXIV.—The work of this firm consists of gas-work of all descriptions. There are several very large chandeliers made suitable either for gas, candles, petrolene, or the French moderator-burner; they are finished in gilt, lacquer, and bronze, and they have a very beautiful appearance. The smaller chandeliers in all cases have centre lights, but fixtures; the opal reflector and a small smoke-consumer form the vase. They are mostly made with six lights and upwards; they are lacquered of a deep gold colour, and intermixed with a little steel bronze. They are very nicely got up. They have most splendid billiard-lights, mostly all zinc, and bronzed in different colours, which looked very nice.

The smaller work is light, and not very well finished; they have many different kinds of harp pendants, but all of them with a ring and opal reflector; they are mostly all plain, and are of general use in Paris; there is hardly a window but there are some of these pendants fixed. There are but few common fittings, and not very good ones.

Bavelaere, Paris.—The work of this firm was all zinc. The articles were all made for gas, and so arranged, that they can be used for candles and moderator lamps. They are all in bronze of different colours, and are very highly finished. There are some nicely-arranged hall lamps; they are no doubt heavy, but still have a light appearance. There seems to be no tube in them at all; these also are of general use in Paris.

H. Monier, Paris.—No. 41, Class XXIV.—There are some new patent gas-burners here; they are the colour of opal, the centre of them is a kind of platter glazed; they look very nice, but I did not see them burning, so I cannot tell how they burn.

J. B. Bodart, Paris.—No. 44, Class XXIV.—Most of the work of this firm is light, made for gas, but arranged so as to burn candles or petrolene; it is mostly bright, lacquered a deep gold colour. It is intermixed with different coloured glass hanging about from all parts. There seems at this place a deal of glass used. It is of the commonest description; the ruby and blue, they told me, were only stained, and therefore it is very cheap. The casting here seemed better than any other I saw in Paris; I think it is equal to our own. The work, on the whole, is not so well finished as at most of the other places.

Travers, Paris.—No. 58, Class XXIV.—The work here is heavy; it is in gilt and bronze, but there are some few chandeliers that are lacquered very pale; they intermix the lacquered work with an artistic bronze. The bronze is very light indeed, the green is very delicate, mixed with a light lacquer, which has a very chaste appearance. The work is beautifully got up, it is chased all over, and is very expensive.

The chandeliers in most cases have centre lights to slide, as before mentioned; there is very little glass used, and where it is introduced, it is very good; the prevailing colours seemed to be ruby enamelled, and blue gilt, which have a very rich appearance.

There are some very large brackets, with as many as thirteen lights; these brackets are either for gas, or the French moderator lamp. The smaller work is mostly in bronze, and not so nicely finished as the other work. There were a few common fittings here, they seemed finished for the occasion, they were burnished all over.

Godineau and Cie., Paris.—The work here was very heavy indeed; it was chased all over, and clumsily put together. The chandeliers were all with a centre light, and most of them stiff; these were all lacquered of a very deep colour, and the burnishing was very bad. This work altogether was the worst I saw; there were several hall lamps, the heaviest and awkwardest looking things I saw in the Exhibition, and a few brackets of a similar description.

Hadrot, L., Junr., Bolnet, and Bordier, Paris.—No. 53, Class XXIV.—At this place there were some very prettily contrived lamps; they were well got up in oxydized silver, and relieved; the silver parts were scratched very bright, and the relieved parts were burnished very well, and lacquered a very deep gold colour, which looked very beautiful. In many cases there was a deal of crystallised and ruby glass

introduced, which had a very rich appearance. The casting here was very middling, but all the prominent parts were chased.

There were some very beautiful billiard lamps in bronze, they were almost all iron, and the casting in iron was very good indeed; there were pieces of bright brass intermixed with it. For a long time I thought the lamps were all brass till I had been to the stall many times. I scraped a bit of the bronze off, and then I found my mistake, and still the lamps looked very well.

This is a description of all the principal work done in Paris; there is not any difference in any respect from what is mentioned herein. I visited four manufactories, and they treated me with the greatest respect. Anything that I asked them, they explained to me without any reserve. The manufactories are very large, and they seem to make all they use on their premises. They are almost all men employed, and they seem to take it very easy. In most of the manufactories, the unskilled receive from $3\frac{1}{2}$ francs to 5 francs per day, and the others receive from 5 to 9 francs per day. The hours of work vary from 9 to 10 hours a day.

ALGERIA.

Ahmed Ben El Bel Khiri (Setif, Constantine) Iron Lamp.—No 1. Class XXIV.—This lamp was of a very awkward construction; it was made either for gas, petroline, or moderator burner. The casting was good, the bronze was very dark, but still had a very brilliant appearance.

PRUSSIA.

C. H. Stobwasser and Co., Berlin.—No. 1, Class XXIV.—The lamps here were a great deal lighter than the French work, but still they were of a very similar construction. All the chandeliers had the centre lights, but the consumers were of some patent material; they are extraordinarily light, and no thicker than cambric paper.

Their hall lamps were light, and all with single dishes, and the rings were broad, ornamental patterns.

Their brackets were light, but the ornaments very pretty. The finish of the work was but middling.

Schaffer and Walcker, Berlin.—No. 2, Class XXIV.—This work is the most suitable for general trade; some of it was extraordinarily light, and others heavy. I think any one could suit himself with a chandelier from about 50s. to two or three hundred pounds.

There were several small three-light chandeliers that were very nicely arranged; they had little vases and knobs, and beads of black imitation jet, which looked very nice indeed. I think dark glass would come much cheaper. The beads were hanging by very fine chains in festoons, &c. There were also some small droppers of the same material hanging about them; they were all stiff and very short. The rod above the canopy was hung with a kind of calico hanging round the rod, which seems to be the general way they hang them in Paris.

There were also some chandeliers from 6 to 12 lights, they were also very light, and arranged for either gas or candles. All these chandeliers were made for imitation candles. They were mounted in different

coloured glass, which gives them a very handsome appearance. The better lamps all have centre lights to slide; these are in gilt and bronze.

There are also some very light vestibule lamps that are made to suit sitting and dining rooms. They are arranged round the centre ring with small arms, generally for candles, but could be converted for gas. They are handsome-looking lamps, and I should think well adapted for the general trade, as they would not be very expensive. These lamps are mostly all lacquered very pale, the finish of them is very neat.

There are brackets and stands of almost every variety, both in gilt and bronze, some of the brackets are lacquered of a deep gold colour; there is not much burnishing about this work, but where it is, I find it well done. The casting of this firm seems much better than most of the others, for it requires but little repairing, and the finish of all is very good.

There are some few fittings, some of them heavy, and some light; the finish of them was bad.

I think this would answer for all the Berlin work, for some firms have heavy work, and some light.

None of the others require any special mention.

AUSTRIA.

Class XXIV.—This work seems of a very great sameness, for they use in the chandeliers a great deal of glass both crystallised and stained to imitate ruby, which gives the work a very light appearance. It is arranged either for candles or gas. It is mostly gilt, and not very well finished. The casting seems but middling, for all the prominent parts are chased. The burnishing here is not very good; where there is a large piece it is very much rivelled.

UNITED STATES.

Class XXIV.—There are several large chandeliers here mostly iron, but they are most elegantly finished. The colour is somewhat similar to our shady red, only much better done. The casting is beautiful, and the way it is finished is most extraordinary. There are many other hanging lamps, brackets, &c., of the same material and colour, all made either for petrolene or gas, and these are also well finished. These chandeliers are all bronzed by a new process.

GREAT BRITAIN.

Johnston, Fraser, and Co., Glasgow.—No. 28, Class XXIV.—The work of this firm consisted of a few chandeliers and lobby lanterns, which I think were of very awkward construction. They were old-fashioned things, and I consider they were finished very badly indeed.

There are others who send work from Scotland which requires no special comment, for most of it is very badly finished.

T. Tucker and Son, London.—The work from this firm was of the usual construction, the castings fair, the dipping not good, the lacquering of a deep gold colour, and the finish in general pretty good. I could see nothing for any special remark.

Best and Hobson, Birmingham.—Their chandeliers and brackets, &c., were of the usual style.

Phillips, Birmingham, had a few chandeliers in the Exhibition.

One or two of the smaller ones were nicely arranged. There was one large chandelier in itself very heavy indeed, but its style and finish is very creditable. It was of a silver bronze, and scratched up to a very bright surface. It was then scraped and burnished very beautifully, and lacquered a high gold colour, which had the appearance more of plated wares than of chandelier work; the way it was relieved gave it a light and beautiful appearance. I consider the bronze of this house was the best in the English department.

R. W. Winfield and Co., Birmingham, had a rare assortment of chandeliers, brackets, vestibule lamps, and other work, which was chiefly lacquered. The work was beautifully got up in every department, and I consider this was the best work in the Exhibition, for most of it was light, of good designs; it was good metal, well cast, and well chased; but still there was nothing new for any special praise: it was the English style over and over again. Go where I would through the English Department, there were the same shaped arms; the same body and vase met my eye at every stall. It was far different in the Foreign Department, for there almost every lamp was differently shaped, both in arms and body, for vases were but rarely used.

W. Blews and Sons, Birmingham, exhibit a variety of chandeliers, &c., well adapted for the different markets. They are the cheapest work in the Exhibition. They have several five-light chandeliers of new designs, and differently arranged from most of the English work. They were in bright and bronze. The lacquering, in my opinion, was far too pale. There were also some light, smaller lamps, which were arranged more after the style of the foreign work, mounted with crystal drops, &c., which gave them a very handsome appearance. The work generally was well finished.

Having said sufficient of the quality and character of work turned out by different nations. I will proceed to make a few remarks affecting the work and the trade generally. The cost of material of the French work would be under our own; for instance, the French use a great quantity of zinc, iron, and other cheaper materials, which is all bronzed in different colours. Where brass is used, it is of the commonest description, but gilt, instead of being dipped and lacquered, as it is here. I also find they use a particular kind of wood, carved and shaped in many splendid designs, which are also gilt; and, in particular parts, they are coloured with different kinds of colour, and they have a very beautiful appearance. Whether the use of this wood is a cheaper mode than our own I was not able to ascertain. The general class of foreign work was, in my belief, very elaborate, and more attractive to the eye than the English work, but not so durable. Upon inquiry, I find that the foreign work is more expensive than the English; for example, one of their five-light chandeliers would cost almost double the amount of one of our water-slides. I may here mention the greater portion of their chandeliers are made stiff, without a slide. One that I inquired the price of was 18*l.* 4*s.* in English money, net. I should think the same chandelier could be bought here from 9*l.* to 10*l.* net.

I cannot account for the extra charge other than that they pay higher wages than the English. And, again, they do not employ any boys:

their work is done by men. In one manufactory there were upwards of 480 men employed, and in another about 350 or 380, and I did not see one single boy. There the men receive from three and a-half to five francs per day for the same class of work that boys are employed to do in England, who get from five to seven shillings a-week. And, again, there the men are paid mostly by the day, and not by the piece; an ordinary workman averaging from five to eight francs per day of ten hours. A first-class workman receives much more than this.

And, again, the amount of work done by the French is not in any way to be compared to the amount of work an Englishman does in a day. The French workmen always appear to be smoking and singing incessantly while at their work, a practice which looked very strange to me.

With respect to their mode of working, and division of labour, I noticed that there were certain men to certain parts of work; for instance, there is one set of men to file up, another set for turning and checking, another set for fitting, and another set to finish.

There is not any machinery used at all. There are a few lathes at work by mill-power, for the heaviest of the turning, but I think the greater portion is done by foot-lathe. The kind of lathe they use is what we had used to call a pole-lathe, which is quite out of date with us. This is a kind of lathe where the workman can either sit or stand at his pleasure. I consider they are very much behind us in lathe work. The kind of vice they use I prefer to the one generally used here. It is constructed to reverse any way, instead of having to take the work in and out. Their blow-pipes are all supplied by a fan instead of bellows, as ours are, but they were not carried out properly, on account of the wind-pipes being too small. They are constructed with two blasts, top and bottom, and made so as to use either or both.

With respect to education, I did not have an opportunity to notice much more than that the workpeople generally are much better up in fine arts than our people. This I think a very great failing with the English, that they are not sufficiently educated in drawing and the fine arts. I think, unless there is something done in this direction, that we shall not retain the supremacy we now hold with respect to the chandelier trade. France has made such progress in the trade these last few years that, unless something is done in that direction, we shall not be able to keep pace with the French. They have not as yet done much in the common chandeliers, but there is not the least doubt they will do so before long.

Their habits of life appear to be very different to ours, for when they receive their wages, which is fortnightly, they seem to have a great desire to go out of the city a short distance, where there is always plenty to be seen and learned. A great many make their way to Versailles, which seems a very favourite place.

I made many inquiries, but did not hear of one single Association in connexion with this branch of trade. From what I saw, I should not think there was any necessity for one, as there appears to be such sociability existing between masters and men.

PLUMBERS' BRASS FOUNDRY.

BY THOMAS BAYLEY,

BRASS-FOUNDER, BIRMINGHAM

DURING my visit to the Paris Exhibition I went through the different Courts. I find that five countries besides England exhibit specimens of plumbers' brasswork, viz., France, Belgium, United States, Prussia, and Austria. Austria and Prussia show one case each of steam and water taps. I consider them inferior, both in finish and proportion.

The United States and Belgium have two cases, each of steam and water taps, varying from three inches to three-eighths, of the ordinary plug and screw kind. They are left from the casting, except the parts where they are screwed and plugged. Their general appearance is good.

There are eleven Paris exhibitors. I did not meet with one from any other part of France. One case is much like the rest. They make a great show by introducing so many articles of the same kind, such as steam-cocks, varying from four inches to half an inch. The same applies to water, lever, and screw-valve taps, pumps, joints, wine-taps, and steam-whistles. The pump-cylinders are cast, and bored out by cutters, and painted externally. The taps and whistles are well polished, and their form is much the same as our own.

I visited six manufactories. The first was J. F. Cail and Co.'s large works for the manufacture of portable and other steam-engines. They make everything that belongs to the engine on their own premises.

This is a large open place. They have puddlers, casters, steam-hammers, brass-workers, smiths, forgers, boiler-makers, and engine-fitters, all under the same roof.

There are about thirty men employed at engine brasswork. The lathes work by steam-power. They use the slide-rest for boring out large cocks. The parts not turned are finished by the polisher from the casting, with emery-bobs.

The brass-workers at the above works get from 3s. 4d. to 4s. 7d. per day, the polishers from 5s. 10d. to 6s. 8d., smiths 4s. 2d., and strikers 2s. 6d. per day.

The second was Lacarrière and Co's., manufacturers of gas-fittings and chandeliers, lamp-posts, steam and water taps. The taps are common, both in workmanship and appearance. Some of the chandeliers are made partly of zinc, they cover them by the electro deposit process

with copper, and they are thus made to look like real bronze. The cast-iron lamp-posts made at these works for the streets of Paris, are also covered with a deposit of copper, which makes them have the appearance of bronze castings when fixed, and they have this advantage—they do not require to be painted, to preserve them from rust.

My third visit was to Barbédienne's artistic bronze works and chandelier manufactory. They have about 400 men employed on various works of art. About 200 fitters and chasers, 80 moulders and casters, 40 enamellers, and 30 marble workers; the rest are engaged as designers, moulders, gilding, pattern making, &c.

They were making some large enamelled vases, about six feet six inches high; they cast them in three pieces—the largest part, i.e., the body, is two feet nine inches high; the pattern is like a thread running about them, which is cast on; they are splendid castings. There are upwards of 180 enamel colours introduced on one of these vases. They are very good casters at these works, but their mode of casting would not suit Birmingham.

The inside cores are made in the sand mould for each figure, and the core is cut down to leave the metal the required thickness. Though they make large quantities of the sand pattern figures, they never use core stocks, which makes it a long tedious process.

I saw them packing a fine chandelier for England, that had been ordered, which shows that we have not all the chandelier trade to ourselves.

The fitters, chasers, and enamellers, get from 5s. to 6s. 8d. per day, moulders 6s. 8d., and casters 10s. per day.

The fourth visit was to Monduit and Béchet's, coppersmiths, zinc and lead workers, and brass tap makers. The taps they make at these works are of a common sort, and poor in make and finish; but their zinc, lead, and copper work is very good. They were making a large crowning or dome for the pavilion of the Emperor, at the New Opera House. The dome is supported by large figures and Roman brackets. On the top there stand eight large eagles; they are six feet across the wings. The whole of the crowning, including the supports and mountings, is made out of sheet copper, by hammering it on to cast-iron models in pieces. The eagle is made in about twelve parts, then fitted well together and joined with soft solder. They are of good form, and equal in appearance to many of the bronze castings.

The objects are thus produced:—A cast-iron model, or part of the model, corresponding with the form of figure desired to be made, is first produced, pieces of sheet copper are taken and beaten down on the iron model, and so on, until pieces of formed copper are made to cover the whole figure or model, these are then carefully fitted together to produce the complete figure. These parts are then soldered together with soft solder. They are to be gilt when fixed.

The men at these works get from 3s. 4d. to 4s. 7d. per day.

The fifth place I went to was Cadet and Co.'s, manufacturers of pumps, steam and water taps. Most of the pumps are fitted with syphon-valves, to let off the water during the cold weather to prevent it

freezing. The water taps are all made on the valve principle; the valve bearings are made of vulcanized india-rubber.

They make them all sizes and different patterns, such as lever taps for cisterns, spiral-spring or self-closing taps, and ordinary screw taps. They are well made, and their appearance and finish are good. They export them in large quantities to Prussia, Austria, and Russia.

The sixth was to Bogene and Cie., a small co-operative brass works. There are five workmen at this shop, they commenced business together about two years since with very little capital. For months after they started, they did not earn more than 5s. each per week. They are doing very well now, and expect in the course of two years to have a large place at work. They were making steam and water main cocks of the ordinary kind, pump spouts, and hot-air cylinders; these cylinders are about six inches long and four inches in diameter, they have a valve in the centre, the valve works on a pin that is connected with a key outside for opening or closing, the cylinders are bored with the slide rest, the valve is oval and turned to fit the cylinder with the slide rest. They informed me at this shop that the English sold small taps in Paris for less money than they could make them for; but in the heavy work they could hold their own.

I did not see any beer machines in any of the manufactories that I visited, nor in the Exhibition, excepting those in use in the refreshment-rooms, and they were made in London and Birmingham.

Most of the casting patterns I saw at the different shops I visited were well made and of good form, the patterns for their hollow work, such as pumps, cocks, &c., are pin patterns, that is to say, the pattern is made hollow and in two parts; they make the core in the patterns for each mould as they go on; it is a very slow process.

The Paris workmen appear to have a deal of liberty, they sing and smoke during work hours, and seem to be on very good terms with their employers. Their hours of work are from half-past six in the morning till half-past six at night, and but one hour meal time out of it, that is from eleven till twelve. They have no Saturday half-day holiday, and they work as a rule half a day on Sunday, some of them all day. The men appear to be slow at work, though they work more hours and for less money per day than we do in Birmingham. I may safely say, from the way I saw them at work, that a Birmingham workman would do at the engine and plumbers' brass trades from forty to fifty per cent. more than a Paris workman.

There are but very few boys at work, not more than one to twenty men, and the youngest appeared more than fourteen years of age.

The tools are similar to our own; but I saw an arrangement of a vice they have in use in Paris which would be useful to our fitters, especially to chasers and repairers. It is round at the part where the flower or staple connects our vice to the bench, a clip is made to fit this part of the vice, this is screwed to the bench, and allows the vice to be moved from right to left horizontally; it can be fixed in any position required by tightening the screw that secures the vice to the bench.

CABINET BRASS-FOUNDRY, ETC.

By WILLIAM GORMAN,

BRASS-FOUNDER, BIRMINGHAM.

THE cabinet brass-foundry trade (judging from the absence in all the Foreign Departments of the Paris Exhibition of even moderately complete collections of articles belonging to it) appears to be almost peculiar to England. I examined in the French division the collections of fourteen firms, who exhibited some one or more of the articles belonging to the trade, such as espagnolette bolts, lock furniture, handles, and hinges. The French work may be divided into two very distinct classes, the one comprising fittings, which are generally much more expensive than any used in England, and are, both in design and workmanship, of the highest class, but are almost taken out of this trade by being gilt.

Gilding seems to supersede the use of lacquer. The casting of all this work is exceedingly good, and a bolder and better effect than is observed in English work is obtained by the very general use of cored castings, which are usually avoided in English patterns, skilled casters being much more rare, and obtaining much larger wages with us than in France. Bronzes used by the French are also better than ours. A large portion of their work is relieved by paint, which has the appearance of enamel, is very smooth, and looks as if it would be durable. The prevailing style of ornamentation is Renaissance, which is also very generally adopted by the other foreign exhibitors. With regard to articles of ordinary use, of these very few are exhibited, and these few very inferior, both in shape and workmanship, to the common articles of our trade. One Belgian firm exhibits espagnolette bolts of the same description as the French, but inferior to them in every respect, though very cheap. Five Prussian firms, taken together, show a collection of cabinet brass-foundry, the most complete in the Exhibition, excluding that of a Birmingham firm. This united exhibit includes nails, hooks, rings, knobs, handles, pulleys, blind furniture, hinges, candlesticks, sconces, call-bells, bolts, &c., and stamped brasswork, all very inferior in workmanship, and generally of the cheapest class; but the design in such articles as admit of ornamentation is very good.

A Russian firm exhibits handles, bolts, and hinges, which are massive, and of the best workmanship, but evidently very expensive.

A Spanish firm exhibits ventilators, bolts, knockers, knobs, and handles, good in every respect.

English cabinet brass-foundry, although the staple trade of Birmingham, has no representative but the firm of Messrs. W. Tonks and Son, who exhibit samples of every variety of articles made in the trade. Their collection comprises about 1,700 specimens. It is difficult to speak of the comparative merits of their work, as practically they have no competitors in the Exhibition, but I believe it to be first-class, both in design and workmanship. One other English firm exhibits more articles belonging to the trade, good in some points, but defective in design.

Three firms exhibit brasswork in the mediæval style only, most of which is well calculated to maintain the reputation of the country.

On the whole I conclude that at present we have the cabinet brass-foundry trade in our hands; but I infer from conversation with several of the foreign exhibitors that before long we may have dangerous competitors both in Belgium and Prussia, in which countries labour, both artistic and ordinary, is considerably cheaper. Taking our own productions in this branch generally, our great deficiency is in design, in which we are surpassed by most of the nations on the Continent; and the deficiency is not confined to ornamental articles, for the plain are frequently very bad in form. I believe one great cause of this defect to be the custom which generally prevails of employing the workman to make his own patterns. If we are to maintain our position, we must pay more attention to form and design, and encourage education in this important direction. I visited the workshop of a firm who cast in brass for the Paris trade. Their work was superior, and was produced more economically than ours, both from a better division of labour and from the use of better appliances than are usual in our shops. The workshop was divided into two parts by a screen running from the roof to within five feet of the floor. On one side of this was a man who attended to the melting of the metal in four furnaces, totally different in construction from ours, being without flues, and supplied with air by a fan worked by hand. These furnaces melted the metal in about half the time required in ours, and with the consumption of very much less fuel. The same man also poured the metal into the moulds, which were placed on the same side of the screen. The parts of the moulds were placed together, and screwed into frames holding eight or ten moulds, thereby saving the tear and wear of boards and wooden screws used by us. Another man was employed in separating the work from the "gets," or "runners," on the other side of the screen, free from all annoyance from the fumes of the furnaces and melted metal. Where the moulders, sixteen in number, were at work, they used no riddles, for their sand was smooth in texture, and made very cohesive, by being passed through a hand-mill after each time it is used in the moulds. One man was sufficient for this duty of preparing the sand. Both from my inspection of this shop and the results of their casting to be seen in the Exhibition, I am satisfied we have much in this department to learn from the French.

GENERAL BRASS-FOUNDRY.

By HENRY DRY,

BRASS-FOUNDER, BIRMINGHAM.

THE general brass-foundry in the Paris Exhibition occupies but a small space in the vast area of the building. It is scattered in different directions, which gives much difficulty in finding it, but perhaps does not fill more than a hundred square yards.

The exhibitors are but few, when compared with the number of manufacturers in some places they come from. For instance, out of the two hundred in Birmingham, there are apparently but two exhibitors. Other places may be well represented as regards number, but most certainly that is not. The number of exhibitors is about fourteen. Ten of these are of Paris, two from Iserlohn, two from Birmingham, one from Lyons, and one from Berlin. The names of those from Paris are Rivain, Garnier and Sons, Bricard and Gauthier, Dupille, Lesaulnier, Fromentin, Heby, Besnard, Prud'homme, and Rouillard.

In the case of Rivain there is a quantity of brass locks, which present an imposing appearance, on account of their size, some of them being as much as eighteen inches long. They are of different and fair designs, but are not "repaired" (or chased) well; some of them very badly. A cross hatch tool has been used, and shows it has not been used by a skilful workman. Some of them are dipped bright, and some are "dead-dipped." The "dead" ones are of a good colour and even lacquer. There are also twelve French bolts, usually called "espagniolette" bolts, of different designs. Some of these are "bright," and some are "dead-dipped." There are also twelve hinges of varied design, having an iron flap, while the knuckle is of fancy brass, which seems to slide over the iron one, so as to match the bolts. There are also plain handles upon marble slabs, and large centre door-knobs fairly dressed, but nothing particular.

The case of Messrs. Garnier and Sons contains a large quantity of bolts of different patterns. Two are large, of brown bronze; others are steel, green antique, and brown antique bronzes. Three look very indifferently, and are perhaps of iron, but are very large.

In the case of Messrs. Bricard and Gauthier there were more bolts, some having arms ten inches long. Some were steel-bronze, some were bright, and some dead-dipped. The dead are of good colour. There are also balustrade knobs, steel-bronze, one with marble ball in brass cup; quadrant-pulls on marble slabs; and large centre door-knobs,

antique green. Against this case is a swing-hinge, which seems to act without springs by the weight of the door. The action appears to be by a double incline in the box, the lowest part being where the door is wanted to stop. A roller attached to the door, and resting on this, must find its way to the bottom, and bring the door to its place. Of course the door must rise and fall as with a rising joint hinge. If the roller be made to fall into a groove to fit it, it will offer a good resistance to any wind which may blow against it.

The case of M. Dupille contains bolts, as before mentioned in others. One has another action; the arm hangs as a knocker, but, when lifted, moves both bolts at once, lifting the one from the bottom and lowering the other from the top, but, as soon as let fall, returns both to their places again. The handle is large and weighty. There is also one large bolt of steel-bronze, which looks well finished.

The case of Lessaulnier has a good show of French bolts and casement-stays. The "dead" ones are of good dip and lacquer, but possess the same fault as others in repairing.

The case of T. Fromentin contains, besides bolts, an assortment of locks, one of which is repaired much better than they are generally. There is also a number of hinges of iron flaps and fancy knuckles, as mentioned before.

In the case of Huby there are bolts, and an assortment of bows for keys, of tasteful pattern and good finish.

The cases of Besnard, Prud'homme, and Rouillard would be only a repetition of the previous articles were they described.

In some of the previously mentioned locks, the lock is divided into two equal parts, and one goes on each door, making both uniform in appearance. One side acts as a lock with knob and keyhole, but the other has a knob to match, which acts upon the bolts only, and goes to top and bottom of door. These look well, and both doors look alike. It may be seen that there are four actions of bolts; one, the espangle head, laying hold top and bottom as you turn the rod round by the handle or arm, another which throws the bolts up and down as you turn the knob in the centre, a third, which acts as a knocker, and another which acts from the lock. The lacquer appears pale red, with perhaps a little tincture of saffron.

The exhibitors of brass-foundry from Iserlohn are Messrs. Kissing and Mollmann, and Assmann, whose cases contained lustres, cornices, pole ends, curtain bands, associated with glass painted, and some small ware, such as hooks of different kinds on card.

The cornices were very fair samples of work in stamping and finish, but the ends and bands were not good; the painted glass gives them a paltry appearance. Seeing the small ware here caused me to notice some other in Paris more particularly than I should have done, and from this I gather that other means are being used for dressing, to those we employ.

The probable mode may be as follows:—

The articles being well barrelled, are then edged if wanted, are cleaned, and then struck in dies, which gives them a level and rather bright surface. They may afterwards be run through aquafortis and lacquered.

They present somewhat the appearance of flat gilding. The dies might be made by first finishing one of the articles, and from that making dies in plaster, then from these, others may be cast in Bessemer steel, which may be polished and used, or perhaps malleable iron, case-hardened, would do for many if not all, but cast steel ones may be made as they are now, in an oliver for forging. A steel pattern would then be required.

The exhibitors from Birmingham are Messrs. Winfield and Co., and Tonks and Sons.

The compartment of Messrs. Winfield contains a good assortment of articles in the brass trade, as cornices, cornice-poles and rings, bed-rings, umbrella-stands, cornice-ends, curtain-bands, firescreen stands, tables of brass and marble, chair of brass upholstered with velvet, window-fittings of every description, a child's cot, and ornamented tubes of great taste. The cornices, poles, and rings are good. The addition of glass corollas to the bands and ends adds much to their beauty. The tables, chair, firescreens, cot and umbrella stands show good design and workmanship.

The case of Tonks and Sons contains a great variety of articles. Firescreen stands, banner arms, sconces, door handles, finger plates, knockers, levers, fire guards, hand screws, portable wardrobe hooks, bell pulls, draw handles, door porters, balustrade, mirror and mediæval work. It would be needless to single any example out by itself, for all bespeak good taste in design and excellency of workmanship. And here it is but right to add that the firms of Winfield and Co., and Tonks and Sons most admirably uphold the honour of Birmingham for its brass-foundry in the midst of the nations of the earth.

The exhibitor from Lyons is M. Fournier, and his case presented a great resemblance to other French cases of the kind; French bolts and locks. The locks were of the large kind, some of them being eighteen inches long. The work is about the same as the others.

Messrs. Stobwasser and Co. are the exhibitors from Berlin, who although not brass-founders have some things which seem to belong to the trade. A firescreen and flower stand show good taste and quality of workmanship. The repairing is well executed.

There is also other brass work or brass gilt which would doubtless be made by the brass-founder; such as grate and fender ornaments, fire-iron handles, fire-dogs, which are cast and show much taste in design and workmanship. Of these articles the firm of Steel and Garland have a good show of excellent work. Three tubes twisted form a good ornament for one of their grates. Of course these articles are used by others, but will be better spoken of in connexion with stoves and grates.

Then again, there are metallic bedsteads in which brass has a prominent part. In the Italian department there were some, but the best set was iron smoothed and bright, which to keep clean would have to be rubbed, which does not seem a suitable performance for a bed room.

In the British there were many almost entirely of brass, and these were produced by three firms from Birmingham, Messrs. Harlow and Co., Messrs. Peyton and Peyton, and Messrs. Winfield and Co.

Messrs. Harlow and Co. exhibited a set of French 'steads with cast pillars, with fancy drawn tube to form frame of head and foot rail, with

cast ornaments to fill up spaces, dovetail corners, and angle iron covered with brass for sides and ends, but cast ornaments running along the front one. Also a set of four post, with about one and a-half polished tube for pillars, and cast ornaments for swell, cast capitals and bases, cast ornament centre of head and foot rail, and cast coronet for centre of top, and knobs to tops of pillars. There is also a child's cot with frame of brass composed of two twisted tubes to form pillars connected by cast ornaments but with iron body. Good and useful work.

The firm of Peyton and Peyton has a very large show of bedsteads. There is one set of polished tube, bowed head and foot rails, with cast ornaments to put together, which look very well. Another set more tastefully decorated with cast work for centre of pillars, and capitals, and bases. There are also two sets of different designs set with imitation jewels, cast ornaments, capitals, and bases. Another set of semicircular head and foot with cast ornaments radiating from centre to polished tube edge. But the best is a set of four post, about eight feet six inches to top of centre, and plain tapering pillars, with cast ornaments for their centre, and massive cast bottoms. The ends of the tubes forming the head and foot rail are united by casting the ornament on them, which not only saves time but also prevents the tube from being burnt in soldering.

These are all good and useful bedsteads, showing much taste. There are also twenty-four different patterns of japanned iron' steads.

The firm of Winfield and Co. have not so large a number of bedsteads as the last, but some of their patterns are most massive in appearance; the thick part of the post being not less than ten inches in diameter. One set of four post is most elaborate in design. The head and foot rails are an excellent display of art as applied to manufacture, and the work shows much skill on the part of the workmen. Both the plain and the ornamented ones look exceedingly good.

Thus it will appear from sentiments already expressed, that amongst that which we can call brass-foundry, Birmingham stands prominent. But when we come to the bronze manufacture of France, and view its numerous statues, statuettes, and groups, with their pendent drapery, and notice their multiplied cores with the fineness of the lines which mark their juncture in the rough casting, or the lightness and delicacy of others, and compare them with our brass casting, we must confess that we are lamentably behindhand.

Or again if we view their finish with their varied hues of bronze from the green antique Assyrian, and all the shades of brown until it vanishes in the bright gold Renaissance, we must consider ourselves deficient.

And if we stand and gaze upon the splendid works of Barbédienne glowing with colour and beauty in *cloisonné enamel*, we must confess that we have much to learn. And although these works may not be considered to belong to the brass-founder, but to the art manufacturer, yet it is certain that there is much that we may learn from them; and that if our work is to find a market upon the Continent by the side of such as these, we must make ours to correspond with them, in figure, in bronze, and in decoration too.

The human figure must possess symmetry of form and grace of position, and with other articles there must be uniformity in appearance. If, for instance, we make a tripod bottom for a candlestick, we should also make a triangular pillar, and if possible a triform nozzle too. There must not be such distortions as we sometimes witness, a tripod bottom, a square pillar, and a pentagonal nozzle. Our mode of dressing may perhaps vary more also than it does, we must use more bronzes and seek to give them additional lustre, and for this purpose some must make them their study. And, again, our "dip" may perhaps vary more. There are articles among the French goods which seem to have been polished, and then run through the aquafortis, and afterwards lacquered, which gives them a good gilt appearance.

Then, again, there surely can be no occasion why enamel should not be introduced into our work. It gives such exquisite beauty that I think nothing else can impart, and would constitute a most splendid decoration for many of our goods; for no one can look upon these gems of beauty by *Barbédienne*, before named, without feeling charmed with their luxuriance. And although it may much increase their cost, yet such goods would be sure to find a sale to decorate the palace of the monarch, or grace the hall of the noble, and perhaps of many more. For such a style of work to be made, suitable patterns would have to be made for them; and these would consist of nicely arranged designs, sunk in the metal to not more than one-sixteenth of an inch, and perhaps a thirty-second would be sufficient. The cells for the different colours would have to be formed by fine lines of metal standing up to the same height, so as to possess an even surface, and after cleaning, these would have to be filled with the different coloured enamels, and then fused, which makes them fixed in the place; the metal would then be dressed afterwards. Thus the whole might be filled with various colours of enamel, or only a portion just sufficient to decorate the metal. In the Exhibition there are vases glowing with colour made in this way, of not less perhaps than forty-two inches high; and it would most certainly take well in our trade. But with us the increase of cost is an alarming hindrance. A figure is sometimes distorted, and a candlestick spoiled, just to save the expense of coreing; and patterns are clipped, till the original design has vanished to make them come cheap in dressing. And the hands of many of our best workmen are tied behind them in bringing out patterns, because they would not be sufficiently cheap; so that it may be seen that this cry for cheapness is a great drawback, and if carried too far, may be the death-blow of our commerce.

In Paris it does not seem to be so, so far as the writer could gather; the men are mostly paid by the day, and not by the piece, and seem to take their time in working out the design. Their wages vary from four to eight francs a-day. They work ten hours a-day, and have some of the failings of the English workman; for in one manufactory the writer visited, there were but few at work, because they had been paid the day before; and they generally have a day's play after receiving their wages, at least so said their master. And the fact of their being at day work, and not piece work, frees them from the worst of all hindrances to the

full development of their ideas, as they have not to do them at so much per dozen.

But besides this, they have other advantages, for they are surrounded by works of art on either hand, which would constitute excellent models wherefrom to design nearly everything that might be required. Their picture-galleries, their schools of art and architecture, form associations which tend to refine their taste, and initiate their eye to purity of form; and it is no surprise to see it worked out in much of their work, for it would be strange indeed if it were not.

The writer had occasion to visit but one manufactory, and though not much to do with the trade before us, it may be interesting to some. The trade is called galvanoplastic; the goods for the most part were made of iron, though some of the best were deposits of copper.

The iron ones were cast in the usual way, and were then edged; after that they were well plumbagoed or blackleaded, and then were put into a bath of sulphate of copper, where they received a coating of the metal by electricity. The Bunsen's battery appeared to be the one used, and they were set in the vats in which the articles were immersed for coating. Of course the jars were not immersed. Here the things received a coat of copper; they were then well washed, and afterwards bronzed of an antique colour. In this way articles were done from a small size up to a lamp-post.

Many lamp-posts were being done at the time, and I found that all the lamp-posts of Paris were done in this way. It is in this way that many of the large figures are executed. Many beautiful panels were also being done at the same time. They are first modelled, and then a matrix is made, and in that the deposit is formed. When it is of sufficient thickness it is taken out, "rifled" and repaired, and then bronzed, as the other articles just mentioned are. The bronze is a liquid, and is put on with a brush, or is what is termed brush-bronze. On being asked if the weather would affect them, they put some under a tap, and let the water run on for some time, but without alteration.

Such then is the information the writer was able to gain by his visit to Paris, and there were impressions made which will not be effaced for years.

CHURCH BELLS.

By JAMES ANSELL,

BELL-CASTER, BIRMINGHAM.

NINE bells of bell-metal cast by Burdin of Lyons.—The shapes of the bells are not so good as the English bells, as they are much longer than our bells in the waist; the sound-bowls are made with a sharp edge inside where the clapper strikes the bell. The clappers used in these bells are much greater than is required in bells of their size and weight. These bells are ornamented with Gothic work round the bells above the sound-bowls, and with leaves over the shoulders of the bells. The head of the bells, the cannons, are ornamented with scrolls, leaves, and flowers. The method of getting the ornamental work on the bells, is first making the ornament in wax, in plaster moulds, and then to put them on the loam-bell before the cope is put on; when all the ornamental work is fixed on the loam-bell, a thickness of fine sifted loam is then put over the wax ornaments, and then the cope is made to its right thickness. When the work is dried and stripped, and the thickness broken out, the wax is left on the cope when finished, is dried over a fire, and the wax melted out of the cope, which leaves the impression of the ornaments in the cope ready to be cast on the bell.

These bells are used with cranks and wire to make the clapper strike the bell, and are worked with levers; and played with the hands the same as a key-board of a piano. These bells when cast are turned and chased; the largest is above eight cwt.

Four bells of bell-metal cast by Goussel, of Metz.—These bells are cast by the same method as the bells of Lyons; the ornaments of these bells are not chased, the bells are long in the waist; the largest bell is about seventeen cwt.; it has a large clapper, the ball of the clapper is eight inches in diameter, and the flight is nine inches long, with a five-inch flange at the end. The clapper is fixed into the bell with a thick leathern strap, six inches wide and one thick, and fastened with three bolts through the head of the clapper. The ornaments on the bells are scrolls, leaves, and flowers; the cannons on the head are covered with leaves and flowers. The method of using the bell is by a segment of a wheel fixed under the stock.

The small bells, viz., turret, ship-bells, post-bells, are made from English patterns. The clappers used, are pieces of iron tapered down to form a hook at the end, to clip the staple.

Five Italian bells, bell-metal.—These bells are the same shape as the French bells, with sharp edge, sound-bowls inside and out. The bells

are ornamented with scrolls, leaves, and flowers; the cannons are round, and ornamented with leaves. These bells are of a good tone. The method of fixing the clapper to the staple is by a leathern strap and buckle; the shape of the clapper is a club, with a staple at the end.

There are four cast-steel bells in the Prussian Department. These bells are plain, the same as the English bells, except that they have square edges, and flange-top heads; the clappers have a long ball, and a square flight with a staple in the end to fasten a rope, to be used for tolling the bell. The weights of the four bells are:—

Kilog.		Kilog.	
First bell	1,800	Second bell	4,500
Third bell	9,000	Fourth bell	14,750

Seven French bells of bell-metal, cast in Paris.—These bells are cast with ornaments of scrolls and flowers, not chased. The cannons of the bells are of Gothic pattern, with claws at the bottom.

Three bells for Brittany.—Ornamented the same as the Paris bells, the cannons are ornamented with leaves and flowers.

Three French bells of bell-metal.—These bells are turned all over outside, the face of the letters being flush with the plain part of the bell. The cannons are made the same as the English heads, the argent hole through the centre.

Eight Russian bells of bell-metal.—These bells are ornamented, turned, and not chased. The bells are much shorter than the French bells. The cannons of the heads have a bead on the front of the cannons, and an argent hole above the cannons, the metal is not so good as in the French bells. The clappers are in the shape of a club, and fixed to the staple with a strap and buckle.

There is one bell of cast-steel, coated with copper, which gives it the appearance of a metal bell, while the bell sounds like one made of cast iron. It has a large clapper in the bell to make it sound a harsh tone.

Two bells of bell-metal from Pays Bas.—These bells are much longer than the French bells, the castings are very good, and the tone sweet. They are turned and chased on the outside, and the cannons have faces on the angles. The clappers are the shape of a club, and fastened to the bell with a strap and buckle. The largest bell is about two feet in diameter.

Three Hungarian bells of bell-metal.—These bells are of a good shape, with ornaments round the sound-bowls and shoulders. One bell has a shank head, and the two others have cannon heads. The bells are of a low mixture of metal. The clappers are made of two flat balls, one below the other, and are fixed with a leathern strap and buckle.

The large bell of Notre Dame.—This bell is one of the finest shaped bells made, and the tone is very fine. This bell has a few ornamental leaves round the shoulders. The diameter of the bell is 8ft. 6in., the thickness is 7½in., the bell has a plain head, the same as an English bell; weight of bell, 36,000 lbs. The clapper is very large, weighing about 5 cwt., and turned.

In respect to the small bells, such as dish, saucer, dog and cup bells, and French call bells, they are all taken from English patterns, and finished in the same style.

TUBES IN ALL METALS.

By JOHN FISHER,
TUBE MAKER, BIRMINGHAM.

ESTIVANT Frères, Rue du Temple, Paris.—Brass and copper tubes, various dimensions, ranging from three-sixteenths in diameter, to 18 in. Bore varying in thickness from 18 wire gauge to $1\frac{1}{4}$ in. thick, greater part soldered, the larger lines cast, got up well and finished very good. Chiefly used for marine boilers, and other purposes in shipping.

Letrange and Co., Paris.—Brass, copper, and lead tubes in great variety, from $\frac{1}{8}$ diameter to 12 in. diameter. Many of the smaller sizes solid drawn, and the large sizes very strong in the metal, and brought out in length by external pressure, requiring great power to do, are very good in finish, made to stand a great internal pressure, the large sizes used for cylinders.

J. J. Laveissière et Fils, Paris.—Tubes, brass, copper, and lead, the brass and copper tubes ranging from $\frac{1}{8}$ outside diameter, to 20 in. external diameter, thickness from one-sixteenth to 2 in. The larger sizes are cast, and then elongated by friction and rolls of great strength, at a great expense for machinery, bands and coils very good, made from these tubes. The lead tubes are very good and in many variety of shapes, got up well in finish.

Wieland and Co., Wurtemberg.—An assortment of tubes for gas, also fittings for the same, got up very badly in the manufacture and finish of sockets and fittings.

In the Russian Department are brass tubes from three-sixteenths to $\frac{1}{2}$ in. diameter, all soldered and cold-drawn afterwards. Badly got up, and finish being inferior indeed.

G. Reishauer, Zurich, Switzerland.—An assortment of taps and tools for the use of the gas tube trade; but are very inferior in style to our own tools in England.

Bricaire and Poulot, Paris.—A very good assortment of burs and taps, for screwing gas tubes and fittings, stocks and dies. Got up first-class, the principal improvement in the above being in the freeing of the burs for screwing, tubes being made to screw very easy. To save the tube splitting whilst screwing it, the same sort of bur is applied to the stocks instead of open dies.

BELGIUM.

Charles Hyanche Chaudoir (Liege), also an establishment at Vienna.—Brass tubes, seamless, got up first class and very good; from 1 in. bore to 6 in. bore, made chiefly for marine boiler tubes.

Jules Chartier, Paris.—Tools for the use of gas fitters in the shape of burs, guides in stocks used for solid burs, very good for screwing tubes by hand, so as to be straight in the socket, or fitting after screwing the same, which is a great thing in the tube trade.

Broughton Copper Company, Manchester.—First class assortment of brass and copper tubes, from $\frac{1}{4}$ in. to 17 in. diameter, made seamless, very good, and used for cylinders, printing rollers, locomotive boilers, and marine purposes; got up in first class style, the ornamental tubes are got up very well indeed, and must take a very good judge to detect the process of putting the impression on, whether by engraved rollers or tools. Very good on the whole.

Gandillot and Co., Paris.—Tubes and fittings, a great assortment, but very badly got up, tubes very rough, and the threads of tubes and fittings very inferior. The samples of fencing such as palisading, gates, doors, railing, which are the most part of the trade of this firm, are got up excellent for the different designs, and are all made of tube, but made a shade lighter than ordinary gas tube. Good tubes of this class would sell well in Paris, as the tubes above are inferior indeed.

Marrel, Bouche, and Bouillet, St. Chamond, Loire.—Tubes, cast iron and wrought, a very good assortment, chiefly used for pile-driving, ranging from four inches to four feet; and also for mining purposes, for boring into the earth, for proving the mines. Got up first-class, with screws and joints made right and left, with collars to prevent the threads of the joints being injured by driving or boring.

Everitt and Sons, Birmingham.—Brass and copper tubes, wire, &c. Tubes are got up well in the workmanship; some solid-drawn and some soldered tubes.

Smethwick Tube Company, near Birmingham.—Exhibit gas and boiler-tubes, fittings, cocks, &c. Boiler-tubes good, but gas-tubes and fittings nothing out of the common way.

Elliott, Selky Oak, near Birmingham.—Brass and copper tubes, from three-eighths to six inches diameter; soldered, cased, and mandrel-drawn plain, also ornamental tubes. These, for workmanship and style of finish, are good.

Messrs. James Russell and Sons, Wednesbury; John Russell and Co., Wednesbury; Messrs. William Blews and Sons, Birmingham and West Bromwich; John Brotherton and Co., Wolverhampton; the Imperial Tube Works, Birmingham.—These, in my opinion, taking all together, are very good specimens of workmanship, and it would be impossible to give any one the preference in the manufacture of tubes and fittings, as a fine show of quantity, or decorated case, does not prove the quality of the goods so well as the daily supply sent from the different works, if they could be examined.

Morris, Tasker and Co., Philadelphia, America.—Tubes and fittings; boiler-tubes, marine and gas, from one-eighth to twelve inches

diameter. Tubes on the whole are got up badly. The fittings are very good, but are all cast malleable iron, not one being wrought iron and forged. Many of the fittings have seven and eight outlets, and would be very expensive to make by forging by hand, whereas the above would come much cheaper.

Albert Wever and Co., Prussia.—A very good assortment of cast-iron tubes, from two to eighteen inches bore. The castings are excellent, and the form of sockets for making joints are very good, being made larger at the back of the sock, where the joints are made so as to prevent the joints or packing blowing out, even at a great pressure.

George Fischer, Schaffhausen, Switzerland.—A good assortment of malleable fittings, consisting of sockets, bends double and single, back-nuts, plugs, crosses, elbows, flanges (very good), pipe-tongs, and grip-tongs. Many of these things are quite new in the gas-tube and fitting trade, but will, in my opinion, become universal in a short time, being much cheaper, and very serviceable.

SADDLERY, ETC.

By JOHN CLAY,

FOREMAN OF SADDLERY WORKS, BIRMINGHAM.

IN making my report I have not mentioned the names of the exhibitors, except where I could give unqualified praise. I have also avoided as much as possible the use of technicalities, hoping thereby (whilst making my meaning plain to saddlers) not to perplex the reader unacquainted with the trade.

FRANCE.—The French exhibit a large quantity of saddlery, the quality of which varies very much. One may see in the same case one saddle of fair average make, and others so badly made that it would be impossible to ride on them with any ease. The French hog-skin is very poor; it is porous, and wants toughness. On the whole, the French are not good saddlers, but it is evident that they are making great efforts to place themselves on an equality with their neighbours. This is apparent in their many attempts at improvement, and their inventions, some of which have exploded years ago in England. One of these inventions is a graduating "saddle-tree" (i.e., a tree that closes so as to fit a narrow-backed horse, and opens to suit a wider-backed one); but, strange as it may appear, the tree only opens in front, and the hind part remains the same, both for wide and narrow-backed horses. With us in England it is a difficulty to make trees strong enough in the gullet to stand the strain they are subjected to in wear, without making them too heavy. In this invention, however, the whole strain is borne by a few threads of a fine screw, that would not stand one day's work in the hunting-field. Another invention is a ventilating seat in a lady's saddle. The centre part of the seat is of the same material as the seat of a cane-bottomed chair, and perforated leather is used for the purpose of giving strength. Whether this invention is intended to benefit horse or rider does not appear, but, in use, the heat and steam from the horse will certainly be brought into close contact with the rider, which inconvenience she would avoid on an ordinary saddle, the gullet of which was properly made, i.e., if the gullet was kept clear from the horse's back, like a tunnel. Further than this no other ventilation is required. Another invention, which aims at giving softness to the seat of the saddle, consists of two capped pieces of india-rubber fixed on opposite sides on the solid wooden tree, and so placed as to receive the "bearings" of the rider. Besides these pieces of india-rubber, no webs, or any of the usual appliances for giving elasticity, are used. Now, when we con-

sider that tall men, short men, men riding with long and men riding with short stirrups, all sit in different positions, it is fair to conclude that the rider on this saddle is as likely to miss the small piece of india-rubber as he is to sit on it; and, if he does miss it, he sits upon the solid wood. Besides this invention, there are several other of similar character.

In the French harness there are many attempts at improvement, especially in the collars. All of these attempts are more or less objectionable, and some are worse than useless. A set of carriage harness is shown, so smothered with massive furniture and ornamentation as to have the look of a confused mass of metal work. Another set of single harness has a gilt chain bead laid all along the strappings. The bead looks very pretty, but, in use, it would interfere with the proper cleaning of the harness; and as in wear the strapping stretched, the chain would break.

The two most important things in a saddle are the "saddle-tree," which may be called the bone, and the "hog-skin," which may be called the skin of the saddle. In both of these the French are much at fault. The trees are both ill-formed and weak, and French "hog-skin" is as much inferior to English as good English basil is inferior to French hog-skin. It is very significant that the French show almost every article of commerce, but make no display of either "saddle-trees" or "hog-skins." I saw only one "hog-skin," and no French "saddle-tree" except the one to explain the graduating principle, that I have described above.

PRUSSIA.—A lady's saddle, by F. Steinmetz, of Berlin, deserves the highest praise for its sound skilful workmanship, good design, and sound material. The shape of the saddle is excellent. The ease of the rider has been the first consideration, and this has been happily carried out by graceful curves and gentle undulations. The general contour of the saddle is such as might have been expected if a lady were to sit upon some plastic material, and so leave an impression for the saddler to work to. The saddle is a hog-skin one, with embroidered doe-skin let in on those parts which come into contact with the rider. The parts of hog-skin are raised so as to form rests and cushions. This is done in a style that shows at once the skill of the workman and the quality of the hog-skin. This saddle is the best in the Exhibition; it is spacious in all parts, and yet very light.

Erb and Heise, of Berlin, show a lady's saddle that is very nearly as good as the above, but it is not quite so light.

Fr. Hartmann, also of Berlin, exhibits a set of chariot-harness of great merit. The pads of this set are very good and showy, they are of the pattern known in England as the Albert. Round a very graceful cantle a silver bead is carried, which fits into the angles of the cantle with the greatest nicety. There is no deviation of margin between the rows of stitching and the bead. The furniture or mountings, and the ornamentation, harmonise in shape and design with the pads, and altogether produce a very fine effect, that contrasts very favourably with a French set of harness that has nearly half-a-hundred weight of metal-work about it, producing no other effect but one of confusion. It is quite clear

that so far as quality of work and material is concerned, Prussia is our closest competitor, but I have no means of ascertaining how far she may compete with us in price.

SPAIN.—The Spaniards show some very fair work. A lady's saddle, by M. Noley, of embossed hog-skin, shows great care and patience. The ornamentation is raised by forcing the hog-skin into a wooden die. The pattern is well designed, and consists of foliage, flowers, and figures. The raised parts are stitched round in single, double, or treble rows, according to the effect that is desired. The embroidery varies in fineness from twenty to thirty stitches per inch. The result is a fine piece of work, sound, chaste, and beautiful. A gentleman's saddle is also shown by the same maker, of similar style to the lady's saddle, and similar results are produced.

By a set of harness of red leather, with gilt furniture, the Spaniards outstrip all other exhibitors in showy or state harness. The set referred to is by far the most rich and gorgeous in the Exhibition. Every part is good, well-designed, and carefully executed, and does great credit to the skill and patience of the makers. There is enough in this display of saddlery to refute the assertion that the Spaniards are not an industrious people.

TURKEY.—Turkey exhibits a great variety of saddlery, from the rude pack-saddle to the gold-embroidered crimson-velvet saddle; some of which latter are really magnificent, and must, because of the richness of the velvet, of the quantity of gold employed, and of the immense labour bestowed, be of almost fabulous price. These saddles are not to be found in the general group of saddlery, but amongst the Ottoman costumes, the richness of which they rival. In general saddlery the Turks are very proficient. Some of their saddles, made in the Somerset style, and covered with morocco leather, would not disgrace a first-rate London maker. The Turks show half-a-dozen distinct styles of saddlery, and as many different kinds of material. They appear capable of making anything that we can make, and some things that we cannot make. They are marvellous embroiderers in gold and silver. I saw no Turkish side or ladies' saddles. They exhibit, however, some portmanteaus of great size, full five feet long, and of proportionate width and depth. These are of good sound workmanship.

ITALY.—Italy shows a rather large case of saddlery, made in the English style, and though there is nothing that calls for especial notice, yet there is evidence of aptitude and promise in the work.

BRAZIL.—Brazil shows saddlery for gentlemen and ladies, that is of the English style; the saddles, however, are very poor, especially those for ladies. The case contains a native saddle of very curious and ingenious workmanship.

UNITED STATES OF AMERICA.—The saddlery of the United States is rough and heavy. A lady's saddle on a leather tree, is very rough and clumsy. The States are far behind Europe as regards saddlery.

CANADA.—Canada exhibits ladies' and gentlemen's saddles, but like those of the United States, they are very rough.

AUSTRALIA.—From Sydney we have a good lady's saddle, but very large and heavy. It is very similar in style and weight to the lady's

saddle sent from Birmingham. There is also a bush or stockman's saddle from Queensland, that is very rough ; in fact, not nearly so good, either as regards work or material, as many even of second quality sent from this country to Australia.

ENGLAND.—A Birmingham maker shows a case of saddles of very good workmanship and material, but the ladies' saddles are too heavy by nearly half-a-stone each. Utility has been sacrificed to show. This is the more to be regretted, as these saddles are the only representatives of Birmingham ; and Walsall does not exhibit a single saddle. There are six or eight London exhibitors, but they show nothing that calls for especial notice. There is the usual sober, sound, and stern utility, which characterizes London work. So much is this the case, indeed, that several of the 1862 novelties have quite disappeared in 1867. Several of the London exhibitors seem quite to disdain style and finish. These remarks about style of work, apply also to the London harness.

SADDLE-TREES.—Of saddle-trees, Messrs. Haynes and Son, of London, are the only exhibitors. Their trees are good in every respect, and will no doubt be a very useful lesson to the French tree-makers.

WHIPS.—Messrs. Swaine and Adeney, and Mr. T. Aldred, both of London, are far in advance of the Continental exhibitors, both as regards style, finish, and durability.

LEATHER.—France, Prussia, and Belgium all show very good leathers of all descriptions, except hog-skin, of which I saw but one, and that was French. The Belgian light leathers, i.e., calf-skins, both plain and japanned, are as elastic as a sheet of india-rubber, and as soft as a silk kerchief. In these kinds of leathers we seem to be far behind Continental manufacturers.

LEATHER, HARNESS, SADDLERY, WHIPS, PORTMANTEAUS, ETC.

By **FREDEBICK THOMPSON,**
PRACTICAL FOREMAN OF SADDLERY WORKS, BIRMINGHAM.

IN submitting my Report on the above subject to your inspection, permit me respectfully to beg your indulgence for any shortcomings or errors that you may discover, reminding you of the many difficulties an Englishman experiences in not understanding the language of our Continental friends. This I found a great bar to getting information I should otherwise have obtained. However, I have done my best under the circumstances, and have endeavoured to submit to you a true and faithful report as far as my abilities will allow.

The usefulness of the study of foreign goods in competition with our own, for both masters and workmen, is now so universally admitted, that it needs no words of mine to recommend it.

As utility, durability, and beauty have formed the groundwork of my observations at the Paris Exhibition, I shall proceed, keeping these essentials constantly in mind. In leather-work, as in many other trades, if we study beauty in the first instance, when constructing an article, without sufficient regard to its usefulness or durability, it is almost worthless, forcibly reminding us of the folly of building a fine house on sand. Saddlery, for example, must have its underwork or foundation, which, though not seen when finished, is of the greatest importance as regards ease, comfort, and durability. Hence, the thing desired in a first-class saddle, is the combination of these three essentials—utility, durability, and beauty. Similar remarks will also apply to harness, portmanteaus, cases, &c.

My intention in writing this Report is to be as brief as possible, compatible with the object of it, avoiding superfluities, yet taking special care not to omit anything worthy of notice or useful in these days of sharp competition.

Great Britain, her colonies and dependencies, are not so well represented in leather, harness, saddlery, &c., as regards the number of exhibitors, as most Englishmen would desire to see; but the superior quality of some of the articles sent will, to a certain extent, greatly assist to make up for such a limited display by this vast and important community. In tanned leather there is, in the British Court, a splendid though small collection of English butt, or sole leather sent from Bristol, which for stout, firm, clear, serviceable leather, is not to be surpassed throughout the Exhibition. Curried leather for harness, and skirt

hides for saddlery, though scarce, are good and well suited for their purposes; dyed skins seem the chief production in this court, and London, Leeds, and Nottingham send the finest collection. Moroccos, mock-moroccos, sheepskins, and skivers, are clearly and beautifully dyed, and have an excellent satin-like finish, all the colours of the rainbow being here depicted. The admirable arrangement in the cases—one colour blending so harmoniously with the other—it is a pleasure to stay and study; the effect of good taste, in contrast with most of the other courts where leather abounds, is really remarkable. Doe, or deerskins and chamois, of a multiplicity of shades, are in profusion; they are dressed for seats of saddles, hunting-breeches, cricketer's-boots, gloves, &c., and are delicately got up, and most of them with excellent finish. Patent horse and cow-hides, of immense size, with a superior japanned surface, and great pliability, are also here exhibited. Hog or pig-skins, for riding-saddles, are few in number, but these are nicely grown, and regularly marked, the grain sound and well-developed; the stained ones are well and evenly finished; the self-coloured skins are not so white and clear as I have seen them. Harness, from this country, is chiefly the production of the metropolitan manufacturers, and not so well selected, taking it collectively, as London houses might have sent. I should imagine this branch of industry was not specially got up for exhibition, or they would doubtless have taken more pains in the choice of material and labour, for it is no more or less than the ordinary way in which their work is regularly turned out. The foreigner, seeing this, will not understand it in that way, but will doubtless imagine that it is the best production, made with effort, and above ordinary skill, for exhibition. London is noted for good solid harness and saddlery work, then why not send a better collection? I do not mean gaudy, showy harness, but good, plain, substantial workmanship and better leather than what is there exhibited. The horse clothing is good, and the breaking harness strong and useful, the checks acting by means of india-rubber tubes, firmly secured at the ends of each strap, girth, &c. Brown saddlery, for quantity and quality, is considerably better represented than the harness. In some of the cases there is very excellent workmanship; take for instance the one from Sydney, where only one lady's saddle is exhibited. It is the ordinary and regularly made saddle of hogskin, with white and coloured insertions. The skin is stained a beautiful dark brown, an excellent colour for wear; the near side and seat, where softness is required, is fancy worked, or quilted and padded; the off side raised or embossed by means of leather dies cut out, and the hogskin forced into them, then filled with a composition of leather shavings, paste, &c., and stitched in with white silk; the whole has a neat and excellent finish, and for style of make, clearness, and freedom of design, is one of the best specimens of this kind of saddle in the Exhibition; surveying it from all points gracefulness abounds. London sends a few plain, well-made, serviceable saddles, but nothing out of the ordinary style. Birmingham contributes a very excellent case, and why a medal was not adjudged to it is a mystery to many, although the work is too much crowded with labour for our home trade. In this case is a jockey skirt union side-saddle, similar in many

respects to the Sydney saddle, with a large stand-up roll at the back of the seat extra, and continued with a graceful sweep part way down near side of flap, to form a support for the rider; it is composed of hogskin, with ornamental doe insertions. Another, similar to the one just described, and varying, chiefly, in the hogskin for the raised work being cut out in an elaborate design, and a nice blue-coloured leather neatly forced up between the spaces, and secured by stitching, the seat and near flap having doe let in, with blue centres, and surcingles and slippers to match. A quilted Somerset, with union rolls, is also a first-class piece of workmanship, and a plain all-over hog side-saddle, shape as above, is a good specimen of what can be accomplished as regards labour in this town, for this kind of saddle is acknowledged by those in the business to be the most difficult piece of work in the trade. This is the only one exhibited. Being entirely plain, it shows every unevenness of construction, whereas quilted work hides many blunders. The greatest drawback in this one is the coarseness of the skin, a finer grained and clearer hogskin would have shown to greater advantage; the workmanship itself deserves all praise. Portmanteaus are chiefly from London, and those exhibited are certainly not so well executed as those of our Parisian friends; there is wanting that clearness, true fitting, and finish, which is observable in the French Court; and in small fancy cases and bags the French place us quite in the shade. With respect to whips, in my opinion we stand pre-eminent as regards durability, style, and price, for the best quality of goods; perhaps the best proof of this is, all the exhibitions of foreign whips are more or less copies from the best English makers. Our common whips are dearer and not nearly so well finished as those exhibited by the French and German houses. England is badly represented in this department, some of the best makers not having exhibited. The London makers have the best display, but with them there is an absence of new designs, and in some instances the mounts are not suitable. Birmingham sends only one case of whips; they are good in some respects, but certainly not a fair exposition of what is being done in the town.

I will now comment on the French Court, for we have to fight them in competition, at the present time, on their own soil, and that is a great advantage to them, and accounts, in a great measure, for their contributing such a large display of goods compared to our own. Their show of leather is excellent, and should teach us a lesson, for if we do not bestir ourselves, and persevere, they will assuredly overtake us; they are making gigantic strides in this direction. In light shoe leather they certainly surpass us, as far as the Exhibition display goes, and foreigners will notice it, too, for it is unmistakable, and who knows what mischief even that alone may do to our English leather trade? Of harness leather, skirt hides, and bridle butts, a small quantity only is shown, and that is not equal to ours. Fancy dyed skins are here in numbers, and have a nice appearance, with good surface, &c., but not such a variety of colour as in the English Court, yet very little inferior, if any. In japanned leather, they are not far behind us; they get an excellent finish on these goods, and those within reach, especially enamelled hides, have a soft pliable feel with them. Rolled leather for mill-banding, shoe

and japanned work, they seem to be best up in. Their hogskins, generally, were not so clear and regular as our own; a few are finished with gold and silver grain, a novelty, and look very well. The French harness differs but little from ours in style; it is generally pretty well manufactured, yet there is nothing in it but what we can touch, or even surpass. The leather, with one or two exceptions, is loose and rough, and cut far into the shoulder, the wrinkles are not well sleeked out in currying; the thread, in most of the harness, is not sufficiently waxed in stitching, not filling up the holes made by the awl, and therefore is not so firm, and will not be so durable. Prince of Wales' collars, for light work, appear very fashionable here, and breast collars are also very much worn. Sleigh bells are common in the streets of Paris, and the dray horses (like all the others entire) have massive woodwork on their collars, instead of the ordinary hames; part way up they form a large heavy scroll, and finish some ten or twelve inches above the top in a pyramidal shape, and then are covered with wools. This seems out of place in so warm a climate as Paris. One set of light carriage harness in the Exhibition is quite a novelty, and has a very neat appearance; it is also produced exceedingly well, is chiefly composed of patent leather, with a neatly-made gold-coloured chain running along centre of straps, round the winkers, collar, pads, &c.; and a beautifully-finished casting of a bird just settling on the top of each pad. The harness furniture generally, throughout this court, is nicely made. A few other cases are equally as good in workmanship, but nothing new worth notice. The difference of the riding saddles in shape and make, compared with ours, is immaterial; they seem to be almost a copy of the English ones. In some cases there are some good specimens of workmanship, and in others quite the reverse. Dark crimson velvet saddles are well made, and quilted in gold-coloured silk, and have a rich appearance, but in wear they will not be very serviceable. The French characteristics in saddlery are similar to our own home trade—viz., not to overcrowd it with an amount of useless labour, but to leave it open, as quilted work especially is intended for softness and ease. A saddle is exhibited in this court made from the skin of a crocodile; it is certainly a curiosity, showing all the scales, and will doubtless be very durable in wear. It is very smooth to feel, and has a glossy surface, and is made on a new principle, which, with a little alteration, I think will be a great improvement to the ordinary saddle. A gentleman when he is used to a saddle does not like to throw it on one side when he changes his horse, and this invention will obviate it; the front parts of the tree being so constructed as to expand or contract at pleasure, according to the size required, by means of a small lever concealed in a pocket underneath the head of the saddle. There is likewise another novelty introduced for the purpose of ventilation; it is in a lady's saddle. The seat is partly composed of cane. Some months ago I made one to answer this purpose, with leather perforated, and space left underneath for a current of air to pass freely between the saddle and the horse's back. I consider this preferable to the cane, in being softer; and the seat is left flat as in other saddles, whereas the cane sinks into a hole, which is objectionable. In fancy leather cases and bags the French

are remarkable for good taste, great finish, and a variety of shapes, and leave us quite in the background, for these excellent little articles, they are so true in fit, and so cleanly produced, that they appear as though they were not handled at all in the manufacturing. Portmanteaus in this court are a superior collection of well-finished goods, perfect in fit, square, and solidly built, and have such a clearness about them, that it gives them a first-class appearance. In the whip department there are a few very good cases of Paris manufacture, excellently finished, and very little inferior to our own—in fact, they have quite an English appearance, and suggest to one's mind that they were made by English workmen expressly for exhibition. I could not but notice the ivory handles, which were white, delicate, and beautiful, and the mounts generally show how well this branch of labour is produced in Paris, but they are not so solid and durable as those made in England.

Russia contributes chiefly in the leather department; boots and shoes, light and heavy; the quality generally is good, but I consider not equal to the English for sole or the French for upper leather. In dyed skins there is not much variety in colour, nor is there the finish which is observable in some of the other courts. Harness, saddle, and bridle leather is not represented. Their Russia leather I certainly expected to find excellent, and was not disappointed. The harness and saddlery I found, after a laborious search, in an out-building, at the extremity of the grounds; they did not come up to my expectations. There is nothing particularly good about it, except the collars, and they are made of a combination of polished wood and leather, are very neat, and show great taste. The harness is showy, and, in some cases, paltry; for instance, one set is composed of leather with red cloth underneath, just showing a scalloped edge on each side of the strapping; this, of course, in wear would some of it certainly work down, while a portion probably would remain up, and have a very ugly appearance. Another set close by is studded all over with a kind of common button. Strength is the best qualification in the Russian harness. Tassel work is freely used, and the strapping in light harness cut extraordinarily narrow, some only three-eighths of an inch wide, but of great thickness, and in viewing it sideways has a very heavy appearance. The saddlery is nothing out of the ordinary way. The portmanteaus are good, but only a few exhibited. Small Russia leather cases, and other fancy articles, are well produced, and are similar in shape and make to the French.

Prussia sends excellent samples of harness and saddlery—in fact, as regards workmanship and materials, quite equal to, if not surpassing, any in the Exhibition. The harness is well and neatly made, and the furniture, although it seems rather too gay to our taste, is nicely made. The hogskin in the side saddles is good, and the workmanship excellent. These saddles have a light appearance, and are made with thigh pads; the leaping heads have an extra large yet graceful curve in them. The saddles are open and clear, with true outline, and for style and finish, taking them collectively, surpass all the others in the Exhibition.

The most important of the Spanish productions in leather work are harness and saddlery, which, for the enormous quantity of labour, are not to be equalled in any of the other courts, the harness, especially that

made for state occasions, is one mass of labour; one set of chariot is composed of scarlet, another of blue leather, both raised and stitched all over in design, and crowded with ornamentation, and massive gold furniture, which is exceedingly well made, and certainly demonstrates what can be produced; the other harness is after the same fashion, only in a milder form, the work is all put in well, but I think far too much of it, which in my opinion spoils it, but if such is the custom of the country from whence it comes, and they pay the price to have it done, so much the better for trade. The brown saddles are of a similar stamp, the raised work is well brought up, and the designs are admirably carried out, although every available space is crowded with this embossing, even the facings are not forgotten, for they are filled with it, and all this mass of stitching is entirely hand work. This kind of ornamentation seems to be the characteristic of this country, for in every case without exception it is to be found, and not at all in small quantities. In one or more instances I found the seats of saddles covered with it, and I am sure that is overstepping the limits to which ornamentation should be carried, for it must make them very hard indeed, as they put narrow strips of hard leather underneath to throw up the design. One interesting little bit of workmanship I must not omit, while in the Spanish court, to notice, viz., a collection of small models of artillery horses fully equipped, with harness nicely fitting, showing the manner in which they dispose of the cannon in traversing mountains, crossing rivers, &c. This is done by taking them to pieces, and the cannon is placed on one horse's back, the wheels across another, the magazine, baggage, carriage, &c., on others, all firmly secured by leather strapping; the saddle work is constructed for each particular purpose.

One solitary trunk is all Spain sends in that line of manufacture, it is covered entirely with good hogs-kine, in panel work, iron bound, with brass ornaments. It is a well made article, and substantially built. Its price is 800*fr.* I could not help thinking an article of this description and price would remain on hand a long time in England before it found a purchaser; there is certainly one inference to be drawn from this court, that, either all their goods are got up specially for exhibition, or the Spanish nobility and gentry are more willing to pay for these high-priced articles than our English.

Austrian leather, generally, is not equal to English or French, yet seems promising for the future; the dyed skins are not so bright and clear as they might be. The portmanteaus differ from ours in this respect, they are made of a white glazed canvas, with expanding gussets in the centre instead of at the sides, with red or black strapping. Harness, &c., nothing particular to notice.

Turkey sends generally a fair sample of leathers, good regular colours, and excellent face, especially on fancy leathers. Of saddles, only a few are of leather, being made chiefly of cloth richly embroidered, with gold and silver lace at the edges; this is very beautiful work of the kind. The leather saddles are well constructed, and are nearly of the English shapes, with the exception of high stand up rolls, on back of seats, in the men's saddles; the knee-pads are larger, and thigh-pads stand up, &c. A few of the saddles are made of enamelled, black patent leather, and quilted

with white silk, others are composed of showy colours, and appear very gay ; in most instances, the workmanship is good.

America sends from New York samples of riding saddles, made upon leather trees, the same shape as ordinary wood trees ; they are composed of layers of stout leather, firmly bound together with copper rivets, they will no doubt be very desirable to those who prefer a spring seat, and I find from experience, that, in a good saddle, the tree is the first part to give way, leaving the leather work in good condition, necessitating a new tree. The saddles alone are nothing remarkable.

Rio Janeiro saddlery is very indifferent I must admit, it is the worst I ever saw exhibited, it is slovenly made, no taste displayed, and roughly finished, the underwork is poor, and altogether a miserable collection. The collars are much better, some are in English, others in French style.

Melbourne contributes one racing saddle, with hog-skin flaps, and doe-skin knee and thigh pads, silk and velvet seat, embroidered with elephants, ships, sheaves of corn, anchors, &c. ; on one flap is a kangaroo, and on the other an emu, embossed and stitched, it is sadly too heavy for racing purposes, the pads on the flaps being out of proportion to the size of the saddle, otherwise it is creditably manufactured.

Africa contributes saddlery for camels, chiefly in velvet, with gold lace trimmings, very few in leather, and those a kind of red Russia. This saddlery is well made, the specimens in velvet are very rich looking, and have massive stirrup-irons.

Italy's harness, like most of the continental harness, has the pipes or loops pressed or stamped, instead of chequered with a warm crease iron ; this has decidedly a sharper appearance. Another noticeable feature in this country's display is, that the harness bridle fronts are fully two inches wide, and have very large silk rosettes and massive bits. Prince of Wales' collars are fashionable in this court.

All throughout the Exhibition, I met with only one specimen of reindeer harness, for sleigh purposes, and that very rude and simple in construction ; the bridle is made of web, with the front ornamented with narrow strips of scarlet cloth, cut in short pieces and stitched on ; the collar composed of deer skin rolled and stitched in shape ; reins fastened to back of noseband, traces to bottom of collar, one trace passes between the legs, the other on off-side of body, then fastened to the sledge ; this is a peculiar method of draught, yet such is the case, and I suppose the custom of the country from whence it comes ; a girdle of web passes round the front part of body to carry the bells.

At one of the largest manufactories in the City of Paris, I gained a little information concerning the hours of labour, rate of wages, &c. I was informed that the saddlery work is chiefly done by the piece, and the prices paid for common goods exceedingly low, but the better class averaged about the same as in England. Their system of work seems to be identical with our own, in having special workmen for each particular branch of the trade. The hours of labour, from six o'clock a.m. to six p.m. Sundays included, one hour daily being allowed for refreshment, at eleven o'clock a.m. Sewing machines are used in the trade, but from what I could gather, not to such an extent as in England. The workshop at this manufactory, is a large square building, with two galleries

all round, and lighted from the roof; it is a well ventilated place, with this advantage likewise, viz., all the workpeople who are some 150 to 200 employed, can be seen almost at a glance. I visited several smaller establishments, but saw nothing particular to notice.

I cannot conclude this report, without stating that my visit to the Exhibition has forcibly impressed me with the conviction, that taking into consideration the sharp competition that has been, and will continue to be practised, it is essential that we, as workmen, should do all in our power, by study, good workmanship, and assiduity, to aid our employers in meeting that competition; and I shall endeavour to inculcate this principle among all the workmen in our trade that I meet with. I offer my best thanks to the Committee, which so carefully provided for our comforts whilst in Paris, and to Mr. Aitken for his many kindnesses, and his ever ready answers to our, sometimes, very troublesome questions.

JEWELLERY, WITH DIAMONDS AND PRECIOUS STONES.

By W. G. DRELEY,

WORKING JEWELLER, BIRMINGHAM.

RESIDING in Birmingham, and not having the opportunity of seeing much of the expensive diamond work except during the Festival season, and what is seen there is nothing to be compared to the things you find exhibited at Paris, I must confess I was rather enchanted at the first sight of the jewellery in the Exhibition; but, soon recovering from my surprise, I commenced to examine the different styles of work and the objects in jewellery in the *French* Department. Commencing with the necklaces, as the most expensive, I found some most elegant specimens in the Greek style, some of them large enough to cover the front of a lady's chest, and so arranged that the different pendent ornaments or drops, when detached, can be used either as a brooch, necklet, pendant, earrings, or ornaments for the hair. I consider the manner of construction very good, and, at the same time, very simple. The whole of the necklace can be joined together by means of hooks and screws that any one could manage. Most of the diamonds were set in silver, and a few in 18-carat gold, which I think is no improvement on the silver settings for large stones; yet an amalgamation of the two metals, silver for the brilliants and gold for the light ornamentation (which is generally set with rose diamonds), shows the character of the design much better, and, when judiciously used, has a very pretty effect.

There were several very nice coronets, but all after the same character—Greek. I was rather surprised at the almost total absence of the imitation of flowers, yet what there was was magnificent. A most complete sprig of lilac was a splendid specimen of what French taste and patience can accomplish, every flower and stem being as perfect as nature, and at the same time retaining plenty of strength. There was also a very nice imitation of a tulip, and most beautifully it was done too, the streaks of colour therein being set with rubies, emeralds, and sapphires, as near the natural shape and colour as it is possible to get them. The remainder of the tulip, as well as the leaves and stem, was set with brilliants and rose diamonds. The harmonising of the colours in this particular instance was really grand. There were also several imitations of birds, suitable either for brooches or ornaments for the hair. The first was a peacock, with spread tail, each eye in the feathers being

supplied with an emerald; and a few, also, were placed on the breast; the rest of the body, as well as the feathers in the tail, was filled up with rose diamonds. A small lyre-bird, in the same case, was also very good. This was made of gold, and set all over with diamonds, mostly rose-cut. The humming-birds were very pretty, and tastily made. The most peculiar point was this, the generality of them are set with rose diamonds, with emeralds or sapphires just on the front of the breast, and these so nicely painted and arranged as to give them all the appearance of nature itself; I mean the patch on the breast. The stones are dark coloured in the centre, and gradually recede in colour till it seems to blend itself with the stones around, which gives a very pleasing effect. There were some butterflies very nicely made and set, but nothing remarkable in the disposal of the stones. I noticed several beetles, as secret watches, the head being set with diamonds, the body a nicely-cut carbuncle, the wings enamelled a nice bright amber colour, each one to work from the body by means of joints, so that, by lifting up each of these, it at once discloses the watch; when closed, it makes a very novel pendant. I think something similar for a locket would sell well. There were several bracelets, some of them very peculiar in the design; for instance, a bulrush, and leaves coming up to the front, the cane going round, and soldered to the end of the rush, the leaves either nicely chased or enamelled, the rush roughly chased, and left dead from the colouring. To add still more to the beauty of the bracelet, a lizard, about two inches in length, set with rose diamonds, creeping up the leaves, or a snake twining itself around, making a very natural and tasty article. Another style of bracelet that looks very rich—a coil of gold tubing, consisting of about four twists, after the fashion of a large spring, made to take on and off the arm by means of wire springs and joints working inside the tubing. The front of the bracelet is enriched with diamonds, rubies, sapphires, and emeralds, ten of them (about three-grain stones), mounted in strong clawed collets, soldered to the tubes, at a distance of about five-eighths of an inch apart, but so arranged that, when placed on the arm, it forms a variegated check pattern. The gold is 18-carat, and all of it polished bright. In some instances they are trying to introduce a fine green gold leaf, chased, running round a bangle-bracelet, polished bright, with a small hollow, about the eighth of an inch from the edge, just wide enough to admit the green gold ornamentation.

There does not seem any great inclination to make use of enamels as ornamentations in this class of goods; they just put a bit to relieve small stones, or to show others up to greater advantage; but, at the same time, there seems a growing partiality for bright gold, as there are several necklaces, and other articles, made out of gold the thickness of a sixpence, or it may be a little thinner, according to what kind of article you may be making, and about three-sixteenths of an inch in width, turned up edgeways, and formed into nice bold scrolls, or ornaments lapped on the front. These were very artistically made. The colour of the gold for these things was very red, which gave it a better appearance. The styles of brooches, pendants, and earrings are the things a Frenchman mostly studies, as several very elegant things in this line came under my notice—a few nicely carved sardonyx, different

shapes, mounted in a plain bezel, encircled with a row of pearls, joined on to a pin at the side, and round the outside of that some fine Greek ornamentation, nicely arranged, or with diamonds similar; large emeralds, sapphires, or amethysts, though they are few, mounted similar. Again, just to make a variety, some tinted scrolls of the Pompeian order, arranged around, and studded in different parts with rubies, emeralds, and diamonds, combined. These look very pretty, and the enamelling is good. Still, at the same time, I don't think them at all serviceable, as it is all surface-enamelling, which is subject to expansion or contraction by being exposed to different temperatures, and in consequence of which they will always want repairing. Reclining figures, in some examples, are introduced, supporting stones, with a little imitation masonry, in gold, relieved with very light diamond sprig work, the figures enamelled self-colour. The chief object seems to be to make as great a show as possible with the smallest quantity of stones; and, with the present style of ornamentation, either the French or any other nation would be able to accomplish that one end. There were a few nice shawl-brooches, round or oval, with domed centres, and with plain ornaments on each side, a cluster of stones in the centre, and a little setting on each side. These were plain and good; also a few secret box-brooches, to hold two portraits; a disc stamped with hollow round the edge, on the front of the disc an ornament of fancy scrolls, set with diamonds, or nicely chased, cut down the centre, and made to open one to the right the other to the left. A bar of pearls or diamonds coming across completely hides the joining, and serves as a fastening as well. A stone called "chrysoprase" looks well with red or white enamels, or stones of the same hue. There were many inlaid monograms, birds or flowers, and then set with rose diamonds. The stones themselves were plainly mounted. I saw nothing specially attractive in the guard and other chains. There were a few sporting novelties suitable for the race-course, and in some of the chains, such as curbs and belchers, every alternate link was polished bright, the other nicely coloured. In some cases silver, platina, or aluminium was used instead of the polished gold. These have a pretty appearance, but I don't think they will wear well, as the constant cleaning of the bright parts would soon spoil the coloured links.

There were several attempts to associate enamels and precious stones with the chains. In the first case they were very successful, and some very pretty things they had got, mostly after the style of a pillar chain, the pillar enamelled various colours, and very tasty in the selection of the designs. As regards the latter, they are not so successful as you might expect, and only in one instance that I saw was it at all effective. That pattern was simply a long flat-sided link connected with a belcher ring, set down the front with rose diamonds, the long link nicely lapped, and a square emerald placed corner-ways in the middle, almost large enough to cover the width of the link. The make and general finish were exceedingly good. The lockets were poorly represented, most of them set in various patterns with different-coloured stones; they were nicely finished, and that was all. There seemed no decided style about them as regards the design. The rings

were nothing in comparison to what I expected to see, being apparently made to use up odd and valuable stones, and mounted very plain indeed. There were only a few pins and studs. The pins were very remarkable for their peculiarity of design; for example, a monkey's head with jockey's cap on, or a Death's head with a small pipe in his mouth, and other things after the same fashion. The studs were nothing more than whole pearls or diamonds plainly mounted. Several spring eye-glass cases nicely chased and enamelled, or set with precious stones, conclude the whole of this class of goods. Throughout nearly the whole you can trace the same idea, but in every stage of its growth. So much for art education, which we stand so much in need of in this country. We have institutions for teaching drawing, but are they the right sort?—that is where the great mistake lies. All that we want for these institutions to be serviceable is a few good draughtsmen from the various trades to select the patterns most suited and give further instructions.

Taking the *Belgian* jewellery, I admit they show a great variety, but when you come to examine it what is it?—there is nothing either in design, make, or setting that any one could call remarkable, although it is chiefly diamond work, and some of it very expensive. The principal articles were brooches, necklet-pendants, earrings, bracelets, lockets, and rings. What there were of the bracelets were just to make up a suite or two. A great many set lockets similar to the French, but not so nicely finished. All of these, or nearly so, were mounted in gold, and in some instances a little blue enamel was introduced into the margins. Some very nice stones, with cut down settings, plainly mounted as rings. There were a few chains, but nothing of importance; the patterns were just the same as we make, but very inferior in finish.

The jewellery exhibited by the *Prussians* was exceedingly good. Several of the things were nicely set, more especially a sprig of geranium leaves, set all over with small diamonds, with the exception of the centre, which was a large diamond, and a very fine one, too; and it greatly added to the brilliancy of the others. A butterfly set with emeralds, rubies, opals, and diamonds, nicely arranged, was hovering over the sprig by means of a strong wire spring, which gave it a very natural and pretty appearance. With the exception of this the general character of the things was similar to our own make—at least I should judge from what I saw that either they had adopted our style or we theirs, yet I will give England the credit both for variety and superior workmanship. The chief of the stones used were diamonds and pearls, diamonds and emeralds, diamonds and turquoises, or all diamonds. There were several bracelets nicely ornamented with filigree work in the Etruscan style, and “domed” brooches with the filigree coming round the front, and a small open cluster of diamonds in the centre. What earrings there were were very expensive, but nothing different to the general style of things. The chains comprised nearly every pattern, but I saw nothing superior in the make or finish. According to my judgment the colour of the gold was also exceedingly pale.

Turning my attention to the *Austrian* jewellery, I find more originality of design. The brooches and bracelets were much better in colour than any I have yet seen, and much superior in the general finish.

There was a good style of bracelet I noticed in particular, and which, with a little alteration, would make a very useful article. It was made as follows. Make a band of gold, the inside to fit the arm; cut it into eight equal parts. Let these be strongly jointed together, so that when laid upon the case it presents quite a flat surface. On each of the slabs was the word "Remember," in the Old English style, the letters being set with precious stones of various colours or enamelled, or the parts named are left quite plain. The letters might be cast and stamped in a die afterwards, and I think with a little more labour this would make a very nice thing. The idea is this, the front of each slab may be made to open by means of a joint at the side, underneath that a receptacle for a portrait or two, according to order or fancy. A bracelet that has been universally called for would then be forthcoming; for instance, a lady, if she so desired it, could have one that would hold portraits of all her friends, or if she pleased she could have each one's initial placed on the lid: instead of fastening with a spring, a bolt, that's much stronger, and likewise a great deal safer, could be substituted. There were more bracelets in the Belcher style, but with a hollow up the centre, and a few large stones in collets to fill up the hollow, or a bangle with a plain band running round, and set with rubies, emeralds, and diamonds placed alternately, the stones set flush. There were a few brooches made in the Roman style—i.e., a plain flat scroll each side, with a bar of emeralds or pink corals to join the two together, with a fancy ornament at the top to fill up, and a few long pippins quite plain complete the brooch. There were several after this style, but they look rather too flat. There still seems an inclination to bring riband work into play again, as there were several examples, but of a bolder character altogether, and very plain.

The rings were various, both as regards price and quality. You can always see the same class of goods in Birmingham, as the Austrian travellers or agents come there and endeavour to stock the markets, and they do in a great measure, owing to getting their stones so much better, if not cheaper, than we do. The reason why is this—they, as also the French, have the first selection, therefore all the most valuable parcels of stones are picked up before they reach England. If they have any inferior stones, by using these fine ones among the inferior ones, it sells the whole lot; for instance, get a diamond cluster ring, you will there find one good stone in the centre, and the surrounding ones are vastly inferior; yet it takes a good judge and a very close inspection to detect it, as the centre stone sheds a brilliancy that adds greatly to the whole, but it is not in rings alone that they do so, but in everything that has diamond cluster work belonging to it.

There was nothing remarkable in the style of the pendants or earrings, but not so with the lockets; of the oval locket with various patterns made and partly set with pearls and turquoises there were many, some in the check pattern, others fancy ornaments with margin of enamel, the centre filled up with rose diamonds, or monograms set or nicely enamelled, and variously coloured; some of the monograms were set in the lid that forms part of the locket.

There was a little difference in the patterns, and the finish of the

chains, shown in this department ; there was a globe-pattern chain, that looked exceedingly well, about three-eighths of an inch in thickness, with turquoises set in collets in every link ; the contrast of the yellow gold and blue turquoise gives it a very refined appearance. In the wove and Brazilian chain they still show their superiority, as they are so closely linked, that you would hardly think it possible that they could retain their flexibility ; the general finish was good, and the same may be said of the variety.

The jewellery of *Italy* I find more difficult than any other to describe, but I must make the attempt, though it may be a feeble one. Most of the jewellery of this country exhibited was exceedingly cheap, consisting of mosaics, as brooches and earrings, with just a plain bit of tubing as a border, but in some, chased and engraved ornaments were introduced to relieve the plainness, and occasionally a little filigree work ; or nicely carved cameos were treated in exactly the same way. They have also a nice collection of rare specimens of coral, some of the carvings on which were matchless works of art. The ornaments worn by the Italian peasantry, and collected by Monsieur Castellani, I will confess are very remarkable specimens, and such, that until you come to look into them thoroughly, and be possessed of a certain amount of knowledge concerning the origin of them, you would be inclined to pass them by as things utterly worthless, but stay awhile, and you will see something that will repay you for your trouble, when you come to examine it. You will find a kind of ponderous ornament used as a stomacher, in the Roman and Byzantine mixed styles ; some of these examples more resemble cabinet furniture than decorations of the person ; the necklaces too are something uncommon ; remarkable among these are those composed of beads slightly graduated from the size of half-a-crown down to a shilling, all covered with filigree wire, wrought into various patterns ; these are threaded on to a piece of silken cord, or plain beads are threaded on the same, or taking one of the smallest and one of the large ones, join them together by means of rings, this forms a pair of earrings to match. There are also various earrings in the ornamented hoop pattern, but with pippins suspended ; they are very large, about three inches in length, large stars made of filigree, or the same with smaller stars placed on the front and lapped, or garnets and pearls mounted into the same kind of thing, or nature was imitated in a very mild form ; these are used for various purposes, but mostly as ornaments for the dress. There are also rings, bracelets, brooches, bearing out the same character, and yet in each, as in the stomacher, you will find plenty of rare ideas, as these examples are very pure in design ; all that they want is condensing a little, to give them a better and more gentle appearance. There are plenty of other things that might be of service, but no one can tell what objects are worthy of imitation ; let everyone examine this collection for himself, as I feel convinced each will have a different opinion as regards the light in which these things are most serviceable. This is a most peculiar class of objects to comment upon, and one that requires much of practical knowledge and great descriptive powers to go into details. I am led to understand that these articles of peasant jewellery will be exhibited in most of the leading towns in

England; so, of course, the Birmingham working jewellers will then have an opportunity of examining the most remarkable things in the cheap peasant jewellery of Italy made in bygone days.

Coming to the things made by Castellani, or under his instructions (most of them purchased by the Countess of Dudley), was a coronet in the pure Byzantine style, its upper edge decorated with discs, on which were introduced crosses set with emeralds and garnets; these discs were placed at a short distance from each other, the discs had "cornice" edges. A necklace of very great beauty was also shown; it was composed of chains, pendants, a profusion of beads and filigree pippins; this was in the most beautiful Italian-Greek style. There was also another coronet to match the necklace. The examination of these things carries conviction to the mind, and demonstrates the great utility, the abundantly suggestive character of the collection of ornaments worn by the peasantry of Italy, known as the "Castellani collection," and purchased by the British Government. To return to the modern exhibits of Castellani, the filigree was very good, also some antique rings; the generality of these stones were engraved and mounted very plain indeed. The stones used in these were as follows:—the red cornelian, the striped onyx, the cat's eye, the lapis lazuli, and the chrysoprase, in different shapes; but instead of the oval-formed stone going up the finger it is placed to stand across; a beautiful wreath for the hair like unto our laurel, leaving no fault to be found with the workman; the berries were formed of selected pearls, the leaves of gold, nicely formed, and, in fact, about the best representation of nature I ever remember seeing of such magnitude. They seem to have been so minute in everything that they have even gone so far as to give you the leaf in a withering state, a most difficult matter, and one that requires a deal of studying. There were some specimens of coral carving in this collection, and very careful in the selection they must have been; likewise a few nicely carved cameos; the little enamelling there was, was of an inferior description.

The jewellery exhibited by Denmark were very common-looking goods, chiefly brooches and earrings as half suites, similar to our own cheap goods in design, but very pale in colour. I noticed a few antiquities among the bracelets and sword handles, chiefly enamelled.

The *Egyptian* jewellery was rather remarkable in design, the oxen introduced were carved in stone, or they were nicely chased in gold, or silver, and placed on a groundwork of blue enamel with a plain ornamentation similar to "cornice" work, to serve as mount, with a few blue enamelled pippins hanging from the bottom. This only extended to brooches, pendants, and earrings, and so similar were they that you would conclude that one man had made the whole of it from one pattern, as there were no variations.

The *Chinese* jewellery was much better, as you have everything that is made, from a solitaire up to a bracelet, merely single articles and decorated with figures and characters in different coloured enamels; there was no chasing that calls for comment.

Coming to *India* I find a very poor collection to what I expected, especially of filigree work; what there was, though, was very nicely

done; the enamelling done by them was superior to anything of the description here. I never saw better colours, especially the reds and greens. There were several articles that had a most beautiful and sparkling appearance, and all through the brilliancy of the enamels. There are more ideas to be got from an Indian shawl, I think, than from any of the jewellery. Yet they show a superior style of handling nature, though the specimens were few.

The *Russian* case although very small is magnificent; a coronet in the pure Byzantine style was most delicately constructed, the mixture of green and white enamels with rubies and diamonds and several large emeralds of superior quality introduced as the design required, which made a very magnificent and effective article, and does very great credit to all parties connected with the manufacturing department. The diamond-set work was also very good. A bunch of flowers is a thing that is a sure criterion of any workman's ability, as the copying of nature requires a great amount of ingenuity and patience to be successful. The bunch of flowers was nicely set, but the greatest praise is due to the mounter, as that part in this instance is something wonderful. The butterfly was another object calling for comment as being one of the most perfect of the kind exhibited, and does the workman that made it, and equally the "setter," great credit. The brooches and rings shown were nicely made, but not decided in style.

Switzerland shows some bracelets similar to what I have seen made in England in the "wove" fashion, but not near so well done as the Germans in this style of article. The chains were also very good, but hardly worth copying; there was the more massively constructed bracelet such as the bangle, but nothing remarkable in the ornamentation of it, a few stamped ornaments to warp into each other joined together by means of pins; these could be chased or decorated with a few cheap stones. A few brooches and earrings tastily made, and a few set locket were also exhibited, various patterns in the Greek and Etruscan style decorated with different coloured enamels, the most conspicuous colours being red, blue, and green; the general finish was exceedingly good, but the articles that show the most originality in this class were the beetles as secret watches alluded to in the French Department. I should think that the Swiss were the originators of this idea as they show such a variety, and equally as well done as the one exhibited in the French Court.

Portugal furnishes some nice filigree work. This seems their chief study, as it does in *Malta*, but the quality of the latter is greatly inferior in point of finish. Several other countries were represented, but had nothing worth mentioning exhibited.

Taking leave of many of the grand sights I have seen, I turn my attention to

England, and after a most careful examination of most, if not all the things exhibited, I find some most extraordinary examples of every article made, and when you come to draw a comparison between England and the other nations producing the same kind of goods, I find we have not so very much to learn to make us equal to any country in the world; it is my firm opinion that we excel in everything but the diamond

mounting, that is, we don't display the same amount of taste as the French in this particular branch of the jewellery trade. Our work is equally as good as theirs in the mounting and setting, but lacks the lightness and purity of design that characterises everything in the French department. Why is it so? simply this; the purchasers of such goods as these in England do not think that a stone can be tightly set unless there is plenty of metal to support it. Another reason is this, they try to get all the finest and largest stones they possibly can, and the people *will* have them. Now does it stand to sense that a man can make as tasty an article with these large stones as he can with some a deal smaller? For instance, just take a glance at the jewels exhibited by Messrs. Hunt and Roskell, "by the kind permission of the Countess of Dudley," you will see there the most magnificent collection of jewels that ever was produced, but yet they are mounted heavily. But examine carefully the "moss rose bud" in the same collection and you cannot find a fault with it on any pretence whatever, it is as perfect a thing as can be made, and why is it so? because they use small stones instead of large. It is not so much the production of the flowers, or such forms of jewellery only, but also the adoption of smaller stones or diamonds that we shall have to take to, if we are to compete with either the French or Germans. If you have to make a pair of diamond earrings value forty pounds, why, the French will make a pair just as large and better to all appearance at a deal less money; that is where one of the difficulties lies in having such large stones and such massive settings; let every man in this particular branch study, and if he can always have in his possession several works on art such as Italian, Byzantine, or Etruscan, then I think he will be able to produce something more effective than what we have been doing lately, and in quite a different style; I am sure that a master would never repent the outlay of a few sovereigns in books that would assist his men in the art of pure designing. Just to give an example, there's the "Devonshire gems" arranged and mounted by Messrs. Hancock and Son, in the Holbein style. The manner in which the style is carried out reflects the greatest credit on all parties concerned, as it is no easy matter to arrange such a quantity of gems, and in so suitable a fashion. The style I very much admire as being light and elegant, and still at the same time retaining plenty of strength. Besides this there were several other things, such as coronets, necklaces, necklets, bracelets, brooches, and earrings. Every thing is displayed here that can be called jewellery, and the style of execution is very superior, but still lacks lightness.

Hunt and Roskell show a very nice and judicious arrangement of opals and emeralds, with diamonds mounted as a necklace.

The case of Harry Emanuel is something pleasing; in it you will find a very extraordinary assortment of articles, several of the suites being very handsome, especially those in the Greek ornament style, and set with different coloured stones fastened on to a plain bangle or oval disc, a brooch with earrings to match. These were very superior in the setting and general finish. In the lockets they have paid very great attention both to workmanship and general selection of design. There were a few novelties in the pendants, those in the "Cellini" style were nicely

enamelled. What diamond work they show does them great credit, both for quality and design. Mr. Brogden also shows a most peculiar taste, and I think a most desirable one, for he has shown to the world a class of goods unequalled, and the manner in which he has treated the different ancient styles is something wonderful. The enamelling is remarkable for the colours displayed and its general finish; any one could easily spend an hour or so at this case in examining the different things, as they are alike pleasing, and at the same time very interesting. Attached to each of the articles are small tickets explaining the history of the things imitated. Thanks are due to this gentleman for his thoughtfulness in doing so. The same can be said of Mr. Phillips, of Cockspur-street, London, who has achieved a name that will make him famous throughout the world, and well deserving of it he is too, for his wonderful perseverance in endeavouring to place before the trade a series of ideas fit to be imitated by anyone; I don't say copied.

Next come Watherston and Son, with a rare assortment of chains all nicely finished, the necklaces also were something different altogether from ordinary ones, and just the style of thing that would, I should say, suit the present taste of the people; these were mostly stamped; then they had other things besides chains, but nothing extraordinary excepting the pink coral necklace, as the corals were exceedingly well matched, very nicely mounted, and greatly enriched by the addition of pearls and diamonds.

Howell, James, and Co. help to add to the general show with a very good display of every kind of articles. There were several very nice set lockets, indeed there was such a variety of everything, and they were all nicely finished, the bracelets especially; a very nice assortment they were. There were several other London houses, all of which deserve great praise for the zeal they have shown in endeavouring to uphold the reputation of English jewellery.

The watch backs shown by Mr. White are excellent examples of enamelling and setting. These have been made for the aristocracy of England.

I must confess I felt very much pleased with the goods exhibited by our townsmen, Messrs. W. and J. Randel, for they have exhibited a class of goods of a superior character. There was some rather expensive work, and considering the short time they have taken to make this class of goods, they have made very rapid strides in the right direction; their exhibits show very great taste and judgment.

Having concluded my examination of most of the jewellery exhibited, I will now endeavour to give you my idea of the cause of the Frenchman's superiority. Art education in France is carried on in quite a different style to what it is in this country; youths there at an early age are taught from a more advanced style of drawings, such as machinery, architecture, or studies from Nature; all these are in a very pure style, and all shaded, none of your being kept at outlining for a couple of years, but the instant they can do a little in drawing, they commence shading, which is not half so sickening to the young mind, and it is at the same time more gratifying. I must confess that the practice of outlining is a very essential thing for such as architects or machinists,

but can a man or youth that is only able to outline, make an article from a drawing, with the same taste as one with a knowledge of shading? I say no, I am sure some better plan than we have at the present time might be found, and with a great deal more benefit to be derived from it by the working man. The aristocracy can afford to pay, and pay for choice too in such matters, but the working classes can do no such thing, they are almost entirely dependent on Government for Art Education. Then look at the buildings in Paris and in other continental cities. Everywhere you go in Paris there is something of the beautiful belonging to it, the palace of the Luxembourg, the Louvre, and other places too numerous to mention, partake of the same strain, the Louvre especially, you can therein trace the different arts from the very earliest age down to the present century. Now these are the sort of things we want; of course there are such places in London, but can a man afford to go there, losing his time and spending his money without any chance of remuneration? Birmingham manufacturers ought to see to this, as it would be to their benefit in the long run, for the jewellery trade is steadily advancing in Birmingham, and I feel sure that there would be a still greater advancement if such places and institutions were available for the working classes of this town, and help to make England as great in the different trades as any nation.

I will now give you a glance of the workshops in France. Everything there is done for the comfort of the working man. The shops are more like palaces, compared to those we work in ourselves. By the kindness of the British Commissioner, and the permission of Mons. Froment-Meurice, I was enabled to visit his establishment; he employs about thirty men, it is one of the first houses in Paris, the manufactory is divided into two distinct sections, the gold workers in a room by themselves, and the diamond workers in another. These rooms are fitted up beautifully, and are well ventilated. There is a most proficient workman as foreman, on whom all the responsibility lies of getting up the work properly. The time of labour is ten hours clear, commencing at seven in the morning, and leaving off at six o'clock in the evening. No eating is allowed in the workshops, which is the only restriction they are subject to. I saw no different modes of working, unless it is taking their time over things made. They are mostly "men" or young men that are employed at such establishments as this; these have generally served their time with imitation diamond setters or "paste" workers, or the manufacturers of plated jewellery, with which Paris abounds. The wages of the men in the first-class department range from six to ten francs per day, and very good wages too, I consider, when you come to calculate the time they are over some of their work. The engraving, chasing, and polishing are done on the premises, as each of these is reckoned a separate trade. The polishing is generally done by females, but without the assistance of a lathe, nothing but hand brushing for what there is any necessity for polishing. The polishers earn from one to four francs each, or in some cases five francs per day; for instance, if they want a thing just cleaned up, it is sent out to be done and charged for accordingly, and the workman has none of that rumbling noise of the lathe to annoy him all day long. Every man on the premises

of Mons. Froment-Meurice was capable of designing and making his own work, although it is not usual for them to do it. I could not help noticing the good feeling existing between master and men, nothing at all tyrannical belonging to the former, but then, a master cannot help appreciating his men that have the interest of his trade at heart, and do all they possibly can to please. There are of course those who grumble, though there are exceptions in this as well as everything else, but when a black sheep gets among the flock, the first thing the workmen do is to get him removed as quickly as possible, as it spoils the harmony of everything if he remains. I also visited the silversmiths' shop, which is about half-a-mile from the other establishment. I found just the same order of things there as at the other place; not knowing anything practically about the silver-smithing myself, I am not enabled to give you details. What work I saw was in the very best style, comprising trophies, urns, jugs, &c., these were most beautiful in the design, and nicely executed.

I think this comprises the greatest part of my observations, at least those that will be of any service to my own countrymen.

JEWELLERY AND GILT TOYS.

By JAMES PLAMPIN,

WORKING JEWELLER, BIRMINGHAM.

IT is a general opinion that the Paris Exhibition of 1867, though styled universal, is strictly a collection of French manufactures. No other nation is regarded as fairly represented. However this may be as regards other manufactures, of the jewellery we believe it is to a great extent true. The proportion of French exhibitors over those of other nations may be estimated at about four to one, but the proportion of exhibits is nearer six to one. On the part of the French manufacturers no expense, time, or trouble seems to have been spared in their endeavours to worthily represent their nation. The arrangement of the collection is exceedingly judicious, and sets off to advantage the various productions.

The superiority of the French collection, as such, cannot, we think, be denied, but when we call to mind that very much of the work (especially in the fine jewellery) is got up specially to exhibit it in a practical point of view, it makes the superiority more apparent than real. In jewellery not of this class the superiority consists in the excellence of the design and the lightness of the construction. All the specimens, from the most expensive down to the commonest, are well designed, and evidence a thorough acquaintance with ornamental art. Hence we believe they are largely, if not entirely, the production of professional designers. All the outlines are artistic, free, flowing, and graceful. There are few incongruities, and it is hard to suppose that such universal beauty of form is not the production of professional designers, or exceptionally skilled workmen. In proof of the former, we may state that there is a large class of persons in Paris who begin life as artists, but who, through want of ability or means, abandon their studies, and obtain a livelihood by applying their artistic acquirements to the production of designs. A principal feature of the French designs is the prevalence of Greek ornament, which, from its beauty of form, combined with evenness of outline, is peculiarly adapted to jewellery; but the few specimens in Roman, and the still fewer in Elizabethan ornament, from their excellence prove that their resources have been very much overlooked.

The ornamentation of the French exhibits is characteristic from its variety; lapping, engraving, chasing, and enamelling being frequently introduced into one article. In general work, enamel is but sparingly

employed, but in the elaboration of works of art it is more skilfully applied than by any other nation.

In construction the French work is superior in lightness, the metal, even in the common work, being regarded more as an accessory than otherwise. In fine diamond work no nation exhibits productions of equal lightness to some in the case of M. Rouvenat. To object that it is inferior in strength is to expect the fulfilment of two conditions impossible to unite.

The diamond work is also superior in fine finish, the polish of the settings being especially good. The finish of the gold work we regard only as equal to the work of those nations which can in fairness be placed in competition with them.

SUPERIOR EXHIBITS.—To M. Rouvenat must, we think, be assigned the highest place in the Exhibition. Every article he exhibits is a gem. Of representations of natural objects, there are flowers, birds of paradise, &c., three of the latter, the varied hues of whose plumage are wonderfully obtained by the combination of gems. The sprig of lilac is also a work of great beauty, but does not appear to be so delicately constructed as we thought from the praise bestowed upon it; the sprays seem formed of the ordinary round wire, instead of flat gold twisted as we had been led to understand from descriptions published. The articles most exquisitely wrought are a few truly magnificent bracelets, one of them from its surpassing beauty is worthy of description. The centre consists of a watch, the face being about the size of a shilling, the lid being composed of a noble emerald, octagon in shape, roundness being obtained by supplying graduated brilliants. The band is about two inches in breadth at its broadest part, and covered with black enamel, upon which is traced exceedingly fine scroll work set with brilliants, forming altogether a work of great excellence.

The case of M. Bernard contains a work of another style, which for novelty of design and naturalness of delineation deserves description. It is a brooch, consisting of a very fine yellow topaz, with a border of vine branches interspersed with leaves and bunches of grapes. At the bottom covering half the stone is the body of a fox, who is represented in the act of reaching a bunch of grapes which hang over the top. The branches are of the ordinary gold, the leaves are of what is termed green gold, and the bunches of grapes are composed of pearls. The branches, leaves, and body of the fox are splendidly chased, and the workmanship faultless.

The case of Mellerio, Brothers, contains some fine specimens. A peacock's feather, the varied colours produced by the combination of gems, is the masterpiece of the case. An ostrich's feather also is constructed with astonishing skill—so flowing and graceful.

The case of M. Boucheron contains the finest diamonds, and a marvellous specimen of transparent enamelling, which is regarded by those best able to judge as one of the choicest works of art in the Exhibition.

The case of Froment Meurice has a most imposing appearance, and the contents are worthy of the receptacle. They are exceedingly various, and all evidence artistic attainments of the highest order.

Those specimens, representations of flowers, are especially good ; a passion-flower coronet, and a necklace of daisies, with pearl droppers, are the gems of the case.

GOLD WORK.—For general bracelets, brooches, and earrings, the collection of M. Soufflot is more worthy than its location and absence of recognition would seem to indicate. The designs are light and graceful, more various in style and judicious in ornament than most other cases. The diamond work is good, remarkable from the prevalence of gold setting, which we cannot but regard as inferior to silver. There are some excellent Elizabethan suites worthy of notice, from their rarity and excellence.

M. Lobjois.—This is a very instructive case. The designs are generally simple but very pretty, the ornamentation varied, with the exception of enamel, which is scarcely at all used. There are some excellent specimens, the chief feature being the introduction of Etruscan gallery upon a lapped surface.

GOLD PLATED WORK.—The best case of this class is that of M. Herié. Every article is stamped with superiority. They are principally half suites, or brooches, with earrings to match. There is not a single unbroken or bull's-eye shape in the case. The designs are all in accordance with some style, the construction is strong without being heavy, the ornamentation is varied and exceedingly good in quality, the finish is also exceedingly good, and we have no hesitation in assigning it the highest place for this class of work in the Exhibition.

CHAINS.—The French chains appear to us more meritorious in the variety of design and ornamentation than in utility or excellence of workmanship. In the more expensive chains the introduction of pearls and turquoise stones is general, and on the whole effective ; and, as in other jewellery, more of the means of ornamentation are combined to beautify one article. The following exhibitions are worthy of mention :—

M. Lemoine, for the tasteful introduction of enamel cross bars.

M. G. A. Fribourg, for combination of precious stones.

M. Moche, for the introduction of some very neat brooches connected to some alberts by a ring, and doing away with the hook or cross bar.

Baudet and Son.—The silver chains in this collection are exceedingly good in design ; the chief feature of ornamentation being the combination of frosted or relief parts in alternation with the bright ; very pretty, but this kind of ornamentation is open to much objection, as it harbours so much dirt. The general finish is but moderate.

GILT WORK.—Of gilt jewellery, the designs, as elsewhere, are superior, but indifferent in finish, and much too brassy in colour. The more meritorious exhibitors are, Messrs. Carmant and Normant, Piel and Nanteau, and C. H. Villemont and Co., whose designs are superior, but finish rather inferior.

ALGERIA.

Of this class, a case of black ornaments exhibited by M. Lemoine are light and tasteful in design, the most choice specimen being three necklaces of flowers appropriately conventionalized.

PRUSSIA.

Of the Prussian Jewellery we did not notice anything worthy of a special description ; the designs are generally classic, the execution good, but there did not appear any special individuality.

BAVARIA.

The Bavarian Jewellery possesses an individuality not at all elegant. The proportion of bright to coloured gold is about nine to one ; coloured upon bright being its principal feature.

The designs evidence a poor acquaintance with ornamental art, the bolder forms being heavy and harsh, and the designs in lighter ornament lack grace and connexion. Both the bright and coloured examples are poor in colour, and the general finish is rather inferior.

AUSTRIA.

The gold work of this class approximates much to the English in style. Large stones, bold scrolls, upon plain surfaces. There is scarcely a bracelet-band or locket-lid but what is plain. The designs are good, but rather remarkable for an almost entire absence of Greek form. The workmanship is exceedingly good, and the colour and finish very superior. The case of Michael Goldschmidt is a very meritorious one, every specimen is good, and mostly according to style, and all consistent. It contains three cases of rings, for general excellence, the best in the Exhibition. The outlines are formed by enamel filled up by gems, the combination of colours being so judicious as to develop the particular beauty of each gem. Bolzani and Co. are the exhibitors of the most superior collection of chains in the Exhibition. They are good in every particular, chasteness of design being combined with strength, and the ornamentation being tasteful and varied. The finest specimens are Alberts, wherein malachite and turquoise stones are alternated with the gold mounts. Coral beads of superior quality are also tastefully introduced. Most of the specimens are expensive, but very beautiful, and their superiority over the exhibits of most other nations appeared to be that of equal beauty combined with extra strength, the more tasteful introduction of stones and enamel, equal workmanship and finish, with more depth and solidity of colour. The other jewellery of this collection consists chiefly of cut garnets of various degrees of size and shades. One or two specimens in which pearl and turquoise stones are combined, from their superiority, excite surprise that the combination is not more extensively employed.

ITALY.

The Castellani collection is very remarkable for presenting two of the most decided contrasts to be seen anywhere, as far as jewellery is concerned. The one contrast consists of nine specimens of archæological gold work. They have a very noble appearance, the details are elaborately worked out, the filigree ornamentation being especially good. The other contrast is the collection of peasants' jewellery, worn

by the lower classes of Italy. They have a marked individuality which is exceedingly picturesque. They are of very large size, the outlines generally are heavy, the ornamentation especially, the filigree being coarse in style and very rough in finish. The specimens in silver filigree are the most artistic in design, and superior in execution. The features of the collection from Naples are the large bead necklaces, and imitation pearls strung together in rows. The silver filigree from Lombardy is flowing and graceful, and of superior workmanship. That from Venice is individual from the absence of stones, the ornamentation being obtained by filigree and perforation. Some of the specimens from Florence, a few brooches of floral design, are tasteful and pretty. As a collection of *national* jewellery possessing a thoroughly distinct individuality, it possesses much interest, and is likely to afford suggestions to the jewellers of other nations, but in themselves they are neither beautiful in form, neat in construction, nor excellent in finish.

INDIA.

The exhibits of this country, with one or two exceptions, are very showy. One or two specimens in silver filigree, for delicacy of construction, are not equalled in the Exhibition. There is a necklace of pearl and turquoise stones surprisingly neat in design, setting, and arrangement of the stones. It appears as un-Indian as it well can do.

GREAT BRITAIN.

Truth compels us to admit the inferiority of this collection. It is not what it ought to have been, and we feel sure it is not what it might have been, had the spirit which seems to have animated some few of the exhibitors been more general.

As with the French advantages, so with the English inferiority, much of it is more apparent than real. The general appearance and arrangement of the collection diminishes rather than adds to the general effect. The cases are so disconnected, that you lose the effect the collection would present as a whole. How far this was a necessity we cannot tell, but any one comparing the two collections, the French and English, cannot but admit (as far as effect is concerned) the inferiority of the English plan. The same want of taste is observable to a greater extent in the arrangement of the details of the cases. Many of the exhibitors have been true to their English character, and regarded the securing of an improved effect as an inferior consideration to that of arranging the stalls so as to have some one behind the counter ready to do a trade. Very much of this collection is massed together in the manner of having just the appearance of so many shop windows. And this is not merely a simile, but partly a fact, for all too few, as the exhibitors of jewellery proper are (barely more than sixteen), several of these were recognised as mere retail dealers. As it seems to us, the upholding of the honour of England in such an important branch of her manufacture should not be left to mere retail dealers, the general arrangement of whose exhibits seems to evidence a greater desire to reap a temporary profit for themselves, than to secure the great and important end.

The exhibits of fine jewellery are very good, but so few. The designs are good, and the forms beautiful, but stiff and hard in arrangement. When according to a style they are generally too severely carried out.

The chief merit of the construction is its strength, combined with neatness, which is more thorough than the French, being observable at the back as well as front, but inferior in delicacy and finish. The settings are inferior to the French in polish.

The design of the general gold work is heavy and unartistic, but we believe it to be the production of professional designers, though of indifferently educated art-workmen. The ornamentation is very slight, seldom more than one kind upon an article, and the general appearance is rich and massive; and when we take into consideration that the works got up specially for exhibition are very few, we can feel more satisfied with the collection. The productions most worthy of notice are those of Messrs. Brogden, who exhibit some fine brooches and bracelets in Egyptian ornament, Harry Emanuel, Hancock and Sons, and Hunt and Roskell, who exhibit the jewels lent by the Countess of Dudley, which are remarkable mainly for the surpassing excellence of the gems. The collection of Messrs. Randel is a most meritorious one, as much for the effort made as the results attained. The case itself is worthy of mention, for the taste in which it is got up. There is no counter; it is lined with crimson cloth, after the manner of the French cases. The articles are few, but well chosen and exhibited to advantage. The outlines are, we must confess, somewhat heavy, but the ornamentation is varied and judicious, and the workmanship superior.

The case of jet work exhibited by Charles Bryan is the most superior in the Exhibition, both for design and finish.

The silver work of W. Marshall and Co. is superior both in design and execution.

GILT WORK.—The English work of this description is superior in colour, being less brassy than the work of other nations. It is inferior to the French in design, and to that nation only, but superior in finish.

In justice to the English workman, it ought to be remembered that results, and not means, are exhibited here. He is only inferior where he has been less educated. For his chief excellences, ingenuity and speed, combined with quality, he is without a rival abroad, and when he himself becomes conscious of his deficiencies, and sets to work to remove them, his superiority in other respects will become equally certain.

THE WORKSHOPS OF FROMENT MEURICE.—During our stay we had an opportunity of visiting the workshops of Froment Meurice, whose case in the Exhibition has such an imposing appearance. Nothing could exceed the courtesy with which we were received; the readiness to afford information, and efforts to render our visit pleasant as well as instructive.

The rooms were very lofty and well ventilated, the windows exceedingly large, reaching from the ceiling to the level of the boards, and opening inside after the manner of folding-doors. There were twenty-eight workmen employed, exclusive of two foremen and clerks. Their respective ages we should judge to be from twenty-five to thirty-five.

Their general appearance was very superior. They seemed very intelligent, and, as we learned, were all more or less acquainted with drawing. We saw no apprentices or women, the polishing being executed off the premises. Their wages averaged from six to seven francs a-day, the specially skilled eight francs. In addition to those already mentioned, two professional designers and modellers are employed. The boards were very large, accommodating about twelve. The gas jets were not fixed, but connected with the main pipe by india-rubber tubing. On the floor round where they were working were laid oblong wooden mats, divided into squares, laid down for the purpose of preventing anything rolling far when dropped, or being trodden upon, and also serving the purpose of collecting the more valuable dust. These mats were not secured, but are taken up on sweeping the floor. The work was of a high order, and very various; one employed upon a smelling-bottle, another upon a locket, another upon a necklace, mostly single articles, and all working from models. There seemed no system to secure speed, perfection in art workmanship being evidently the aim of the firm.

INFLUENCES AFFECTING THE TRADE.—CONDITION AND DIVISION OF LABOUR.—The hours of labour with the French are in some respects more favourable to progress than ours. Commencing work at seven o'clock, they are of necessity earlier risers, and as this causes them to leave earlier they have more leisure in the evenings to improve their minds or health. With them, too, division of labour is less general than with us, except in polishing, which is almost entirely performed by women. The various forms of ornamentation are executed under one roof, and in several establishments even the refining processes, to the saving, of course, of many profits.

WAGES.—The wages of the French jewellers are on the whole superior to the English. We were unable to obtain the present statistics, but in 1855, according to the official returns, the average wage was, for

Jewellery, including stones:—

Men	6 francs 70 centimes	} per day.
Women	3 „ 20 „	

Plated Jewellery:—

Men	8 francs 35 centimes	} per day.
Women	2 „ 95 „	

And as it is since 1855 that the trade has so much increased, it is quite fair to suppose (in the absence of returns to the contrary) that the workman has shared in the general prosperity by an advance of wages; and when we remember that they are able to live cheaper, it makes the balance largely in their favour.

TRADE ASSOCIATIONS.—From the superficial observation we were enabled to make, a better feeling seemed to exist between master and workmen; and though unable to gain particulars, the fact that they have an association in which they unitedly work, and which is assigned as one of the causes which has favoured the progress of the trade, seems to prove that the feeling is real as well as apparent.

EDUCATION.—This we regard as the foundation of French excellence. Their superiority is in taste, and taste is essentially a matter of education.

Owing to the extent of this kind of education, the taste of the *whole nation* is higher than that of the English. While, perhaps, there are scarcely more than four out of 200 English jewellers that can draw, from inquiries made there are scarcely four out of 200 in France who cannot. Nor is this surprising when we learn that drawing is regarded and taught more as an essential than as an accomplishment. As children they are taught at the day-school, and that not occasionally, but as part of the usual routine. The command of the material is thus attained early, and the uninviting elementary knowledge acquired under favourable circumstances. Another feature of their education is their special training for the particular position they are to occupy in after life, which renders them less likely to obtain acquirements useless in their profession, which with us is so common. On leaving school they can study at the Art Institutes free of expense, besides receiving liberal encouragement and reward. In addition to all this having free and constant access to some of the finest art galleries in the world, and living in a city where streets may almost be regarded as so many lesson books, strange indeed would it be if they did not drink in the inspiration and stamp its influence upon the work of their hands. The plain teaching of all this is that we must follow in their steps. The taste of the whole people must somehow or other be raised. The workman has been made the scape-goat in the matter, but he does not deserve all the blame. The elements of drawing must be more generally taught in schools, attendance upon art institutes must be more generally a condition of apprenticeship, and that attendance must secure special training, the facilities must be increased and expense lowered. If French boys can study art at free institutes, why should not English boys do the same? But above all, more generous encouragement must be given to all efforts at improvement. We know well the difficulties which are in the way, but it is a question of overcoming these difficulties or losing our trade. To blame English workmen for not doing without education, encouragement, or reward, what the French workmen can do with it, is as unjust as the Egyptians in the days of old requiring the Children of Israel to make bricks without straw. Place our artisans under equal conditions, and we believe they will produce equal results, and England will not long be threatened with the danger of having industries which supply her millions with bread taken away from her by foreign superiority. The averting of this danger must not be left to art societies with insufficient grants, inadequately supplemented by private liberality; but, to quote the words of an able orator upon a totally different theme, "It is a question for the Crown, for Parliament when it meets, and for the whole nation, whose honour and interest are at stake."

BUTTONS.

By THOMAS JOHNSON,

TOOL-MAKER, BIRMINGHAM.

I HAVE left the purely metal branch of this industry—viz., livery, military, naval, and uniform buttons for universities, &c., and fancy metal buttons, gilt, plated, or bronzed, stamped, chased, or enamelled—to be reported on by my fellow-reporter, Mr. W. Bridges, as they appeared to come within his instructions, feeling that I should, by this arrangement, be better able to give that detailed account of the exhibits in the other branches which seemed to me to be the only thing of value that I could do, in the absence of any chance of reporting on the processes used in the French factories, their general arrangements, the condition of the workpeople so largely engaged in the production of fancy goods, for which the demand and the employment it gives must be irregular, or of the position of the trade where masters are so numerous, and, of course, many in a small way.

The Exhibition is not satisfactory, in so far as there is not a single exhibitor from Great Britain or the United States of America, nor is France itself represented from Lyons, from the district around Paris (except porcelain), nor from the prisons, where the labour of the criminals is utilised in producing buttons ; while amongst what is shown we find no bone, wood, jet, or moulded composition buttons, and scarcely any cut, with very little inlaid glass ; and much of what is shown is either got up for the Exhibition, costly, and unsaleable, or, as is the case largely in the ladies' dress branch, long out of fashion, bygone victories or defeats showing only what has been done. Annexed is a detailed account of what is exhibited :—

Hartog, Charles Jean and Co., late Trélon, Weldon, and Well.—The covered buttons shown by this firm consist of ladies' dress buttons, in convex silk, in graduated sizes, forming three-fourths of their display of cloth buttons ; also, silk balls, and flat silk buttons, with metal drops attached by short chains, and resembling small coin, and in other flat fancy shapes ; some cherry-shaped drops, in buff quilting, with narrow gilt-corded metal bands round each ; and linen and Marseilles quilting buttons, with cloth shanks, in flats, convex, steep, and ball shapes, and some made as acorns. They also show ladies' dress buttons, made with silk faces, in gilt, plated, and black bronzed rims, having, in some cases, glass centres pressed in an ornamental form, varied, in a few, by the introduction of an inner metal rim round the glass. These buttons are well made.

J. Plançon, 30, Rue Moret, Paris.—This is a fine collection of paper buttons, in every imaginable shape, many inlaid with metal, glass, pearl, and coloured japanned centres, of various shapes. The japan is very bright, clear, and free from specks. There is also a display of bronze-rimmed buttons, with black and coloured japanned paper centres, flat, convex, and ball shaped, and some embossed and inlaid as above.

A. Parent and Hamet make a considerable show of covered buttons for ladies' dress, convex, and ball-silk, and velvet-convex buttons, in fine corded silk, in graduated sizes; very good oval satin buttons, and convex and ball-terry buttons, in blue and other coloured silk grounds, with narrow cream-coloured terry velvet cords, worked over the ground in cheeks, about a quarter of an inch square, the effect of which is good. They also show cherry-shaped drop quilting buttons, with bands, like Messrs. Hartog's, with the addition of some in various-coloured corded silks. These various buttons are well made. They, however, show some coloured silk drop buttons, of an oval shape, with a band round like the cherry shape, which are badly made, with deep creases or plaits; and some cloth-shanked linen buttons, in various shapes, also ill made. Their case also contains various patterns of fifty-line buttons, with iron-grey or platinized rims, having centres in silk, enamelled and gilt metal, a few in pearl, with figures of birds, butterflies, beetles, and other subjects engraved thereon, in outline, the outline being picked out in gold, and the figures filled in with colour; and a few solid pinched or pressed flint glass buttons, with metal shanks, are also shown; they are in various fancy shapes, some relieved with patches and spots of paint, in various colours, on the backs, which show through.

Marie and Dumont, Paris.—This firm have a good display of expensive fancy pearl, for ladies' dresses, in all sizes and patterns, some hubbed, others beautifully carved, with designs in high relief, many white, inlaid with various coloured pearl and other centres, and the remainder with sporting subjects and figures of birds, insects, &c., engraved thereon, and outlined, like those shown by Parent and Hamet.

Masse, Paris, shows a few flat and ball coat buttons, in black terry velvet, fairly made.

Lemesle, Paris, exhibits a few covered-coat ball buttons, in terry velvet, ordinary in make and style; some small-shanked paper balls, japanned, blue, and various colours; a few fancy-cut small steel balls; and ladies' dress buttons, in plated, gilt, and bronzed rims, with different coloured plain and fancy bronzed centres, varied, in some cases, by introducing concentric inner rims; also a considerable variety of pinched solid glass buttons, large and small, some with cut edges, but no new effects or styles. These goods are all fairly made.

Neau and Lecomte, Paris, show Florentine buttons, in various sizes, covered with fine lasting; terry velvet buttons, with braided edges, in twenty-four and thirty lines; Paris-shaped coat buttons, in Florentine and dark grey silk, and some few fancy metal vest buttons. The greatest part of the buttons shown by them are for ladies' dress purposes, and they consist of forty-five and fifty-line flat and convex buttons, with japanned iron tops, ornamentally pierced in various patterns, placed over

a plain ground of dark brown glacé silk; also, twenty to forty-line buttons, in gilt, plated, and japanned rims, with centres of moiréd tin, in white and various colours; also, of silk, glass, and black and coloured japanned papers, and small-sized buttons with japanned-iron rims, and varnished paper centres, with lithographed central figures, which, however, have a poor look. The case contains a series illustrating the manufacture of the pierced top, and a pair of tools for executing part of the piercing. The japanning, of which there is a deal in this case, is very well done, and the buttons good in appearance.

J. F. Bapterosses, and Lebeuf-Miliet and Co., Creil.—These two cases contain an excellent and good assortment of porcelain buttons, in graduated sizes, and of four holes, plain and partly coloured, with specimens of shanked trimming buttons.

Risler and Co., Friburg.—Their large case contains the best porcelain buttons exhibited. The four-holes, plain, and partly coloured are very good, and the specimens of shanked bow balls, in imitation of pearl and steel, and some coloured, make a fine show.

Duchel and Fila, Paris, have a great variety of pressed horn buttons, from small to very large sizes, which are fine specimens of this make of buttons. The heads, figures, and ornaments are in very high relief, and the ornaments are very rich.

Hemken and Roethe, Elberfeldt, Prussia, make a small but very varied show of ladies' dress buttons, in half-ball and ball buttons, in black and coloured velvet and corded silk, with pressed flint glass centres introduced in some; convex and bevel-edged lasting buttons, with pressed black glass centres; japanned rims, with black and coloured silk tops, with a few pressed glass centres; also, a few pressed glass buttons (flint), in various sizes and patterns, some picked out at the back in oil colours, to give various effects.

Kolbe and Cie., in Bessungen bei Darmstadt, Grossherzogthum Hessen.—This firm have, by ringing the changes on slight differences in parts, with an almost endless repetition of colours, filled a very large case with buttons for ladies' dresses. This remark applies chiefly to the portion in which moiréd tin is used. That material, varnished in many colours, and paper japanned in various colours, also silk, velvet, and metal are freely used for the tops of the buttons, which have japanned and black bronzed metal rims, and in almost every case glass or japanned centres; the case also contains a few ladies' dress buttons in gilt, plated, and black rims, with pressed glass centres; and a larger display of forty-lined bronzed rimmed buttons in various colours, with tops and centres bronzed in different shades, mixed here and there with moiréd tin. Many of the bronzed centres have heads of men, women, and animals, and ornamental designs, struck up from dies, and the shades of bronze harmonize well. They are the only exhibitors of imitation pearl, a showy but expensive material produced in thin sheets, made up into ladies' buttons with tops of that material, in black, gilt, plated and oxidised rims, varied by the occasional introduction of glass centres. This material is artificial, and prepared from an animal substance, as is evident from its smell when burnt, or well heated. When soaked in water for ten minutes or so it increases very much in bulk, and is con-

verted into a dull gelatinous pulp. With a gentle heat and pressure in dies it can be made to assume various degrees of convexity and shapes, but the lustre is lost in a great measure.

Veuve Leonard Ritzel, Leidensteid, Westphalia.—Ladies' dress buttons form the most prominent feature in this case, being chiefly rimmed in black, plated, gilt and bronzed, with different fancy tops of metal gilt, &c., varied in some with pressed glass centres. The most novel portion consists of a few flat malachite tops, from thirty to thirty-five lines, set in plated, gilt, and black rims. The effect is not good; the malachite, I suppose, is factitious.

A. D. Philipp, Schoenebeck, on the Elbe.—This exhibitor's case contains a collection of vegetable ivory buttons in all the usual patterns, and stained in the various colours used in England. As a comparative novelty may be mentioned a few buttons in various sizes and patterns, in which the ordinary black dye is mottled, or marbled with white spots, but not in an effective or spirited style; such goods are, however, made in England, and the idea more fully carried out.

P. S. Furk, Leidensteid, Westphalia.—With the exception of some exhibitors from Vienna, he is the only person who shows shirt pearl buttons, of which his case contains a few of fair quality. He also shows ladies' dress buttons in pressed glass, with black, gilt, and plated rims; and rimmed buttons in black, gilt, plated, and bronze, with tops of bronze metal bearing all over patterns produced in fancy rolls, as is common with the material of low-priced buttons in England. The tops and rims varied, and in some cases these buttons have glass centres.

Carl Weyerbusch and Co., in Elberfeldt.—Like the last-mentioned exhibitors this firm breaks the monotony, by displaying in their case some goods out of the usual run of the buttons shown. They show a few vegetable ivory buttons in the ordinary patterns and colours; also men's buttons with flexible shanks made from fine thin material in all the usual shapes, some with the flat surfaces ornamented by introducing material of a different colour or texture in fancy shapes, as crosses, stars, squares, &c.; the surface of the buttons when finished being all on the same level or plane. A few of these buttons have been made in England, but their price, and the flimsy nature of their cover, which must be thin to work neatly, will prevent their general introduction. They also show ladies' dress buttons in fancy rims japanned, and black bronzed, with gilt and plated tops of fancy rolled metal as described in the preceding notice, pierced in fancy shapes in the centre, and filled up with pressed glass, or silk, of a shape to correspond with the design pierced.

Langenbeck and Wex, Barmen, have a good show of men's cloth buttons, with flexible shanks similar to those shown by Carl Weyerbusch and Co., the only different feature being that, in those ornamented by introducing materials of a different colour, &c., in various shapes, these shapes were in some cases made to project above the general face of the buttons, and a few of these projecting figures were embossed. For ladies' wear they show a considerable variety of pinched, solid, glass buttons in every possible shape, many being three-eighths of an inch thick, with mint edges, and pressed flint glass buttons with black metal rims, inlaid in the centre with black glass in various ornamental designs; also coloured corded silk buttons with pressed glass centres.

L. M. Caron and Co., Rauenenthal, exhibit a large quantity of ladies' dress-buttons, having glass centres in flint, white and black glass, pressed in every conceivable shape and pattern, and set in japanned, black bronzed, plated, and gilt rims, flat, bevel, convex, and concave, plain, and with patterns in relief, and sunk. Many of the rims are finished, where the pattern is in relief, with the ground gilt or plated, and the ornament in black bronze, and, where the pattern is sunk, with the plain part in black bronze and the sunk ornaments gilt or plated. This style of ornamentation, so applied, has a very good effect; but though it has been known and practised in England for some considerable time, it has made little way here.

Vincenz Schadelbauer and others, Vienna, are, with one exception, the only exhibitors of ordinary shirt and common pearl buttons, and show fair specimens of that branch of the button manufacture.

Metzner and Garber, Vienna.—This case contains samples of the usual sizes in horn buttons, but of a much commoner quality than those shown by the only other exhibitor, whose case has been mentioned among the Paris exhibits.

W. Hamilton, Frederickshald, Norway, has a large octagon case, well filled with rather ordinary specimens of plain and fancy covered buttons, black and coloured; also some linen and brace-buttons, of inferior make.

Some cases may have escaped notice, but must have done so through their being of no importance, or placed out of the way, and it is believed all that require notice have been noted.

REMARKS.—Except in the few instances where I have been compelled to report unfavourably, the goods exhibited appeared generally to be manufactured in quite a fair average manner, and, as far as could be judged through the glass of the cases, solidly and substantially. At the same time I may say that, in the course of my examination, I did not fall in with any buttons that presented the slightest difficulty in making to an experienced toolmaker, or that had not been made, or the like, in England. I was also unsuccessful in meeting with any new material, or, in fact, any process or material that I had not a thorough acquaintance with, and had not worked, except the solid glass with a pearly lustre, now used in the place of the old-fashioned imitation pearl, or hollow glass ware, coloured with the scales of the bleak-fish. This I have not met with unwrought in England, but I know that a Birmingham glass button maker can make the glass, and of course the button. It is not, however, shown in the Exhibition to any extent, and I fear the demand will not repay any one for making the mixture.

As regards two of the recent applications, viz., the manufacture of moiréd tin for buttons, and dyeing vegetable ivory buttons with marble or mottled colours, England can fairly claim a decided superiority.

I will conclude with remarking that though our Continental neighbours may somewhat mislead the public by drawing freely on their old stores for things to be shown, and may also sin against commercial prudence in the expense incurred in getting up and imparting a finish to goods subject to the caprice of fashion, and therefore temporary in character, they have at least added to the interest of the great spectacle for which we are their debtors.

ON BUTTONS.

(SUPPLEMENTAL REPORT.)

By S. W. RICHARDS,

MANAGER OF BUTTON WORKS, BIRMINGHAM.

BUTTONS, from their universal use as an adjunct of clothing, as articles of utility as well as ornaments of dress, are indispensable. We may therefore be prepared for a variety even as diverse as the tastes and wants of the wearers, and for the handsome display in the Paris Exhibition of the present year.

Birmingham, the seat of the button trade in England, whose history is more identified with this branch of industry than almost any other of her numerous industries, may take note how rapidly this trade is growing and extensive it is becoming on the Continent of Europe. In France alone 22,000 persons are employed in it, whilst here it is almost stationary. The branch of the button trade that engages the largest number of hands, and for which there is the most demand—viz., ordinary fancy buttons for ladies' and children's dresses, is much cultivated in Germany, and that country is well represented, but I only purpose noticing those that best represent the class of goods made by them.

L. Kolbe, Darmstadt, shows an extensive assortment of fancy dress buttons. The great number of patterns is surprising, but confined to one style, a combination of either lacquered or silvered rims with fancy tops, with centres in imitation of gems. He also exhibits a less quantity of buttons in imitation of coloured glass—marbled paper, or tin-foils, or colour to produce the effect required, being introduced under flint glass.

The preceding case of buttons is so strictly the type of all of German manufacture, that to notice only cursorily other contributors will suffice, and I may here state that some cases contained a few samples of either vegetable ivory, silk Florentine, or pearl, but the fancy composite buttons of metal and glass were invariably the bulk of their contents.

Caron and Co., Rauenenthal, Prussia, have had a silver medal awarded them for an extensive variety of fancy dress, and also showy and low quality, buttons, the material from which they were made in every case being an imitation of either pearl, ivory, or tortoiseshell in combination, with bronzed rims.

A considerable portion of this display were in neutral tints, and would probably be considered mourning buttons.

Langenbeck and Wex, Burmen, showed a selection of Florentine

buttons with glass centres, the effect in some instances being good, the bright surface of the glass contrasting well with the dead Florentine base. The principle, however, is simply a reproduction of our old-fashioned ladies' buttons with glass centres applied to men's buttons. There were also examples of corded silk buttons with a fancy design in a finer or different material inserted in the centre. But our manufacturers will require no further description of an old friend.

There was rather an elaborate display of fancy dress buttons by P. S. Furk, Leidenscheid, but there is such a repetition and sameness pervading the style of all the Prussian makers, that the inference is that they draw their inspiration from French sources, the result being adaptations economically considered. The foregoing remarks apply to some fancifully-stained vegetable ivory buttons, which are shown where quantity is studied in preference to quality.

Austria has several representatives of buttons. Koch and Co., Vienna, mother-o'-pearl of average merit, and horn buttons, but from the poor appearance of the latter we must conclude they were made to sell low. This was the character of the other examples.

J. Panoff, Moscow, has a few examples of plain balls for liveries, and a few military. The dies for the latter must have been sunk by untutored die-sinkers, so badly were they done. This case contained also a few glass and metal composite buttons, the poorest imitations of their imitating neighbours the Prussians.

Italy was represented by two Milan houses, A. Binda and M. Canesi; and S. Gori, of Florence. There was such a grotesque tinselly appearance about all their coat and mantle buttons, that one felt very doubtful whether such could be worn at any other time than during the Italian carnivals.

The examples shown of military buttons display a lack of ability in their button die-sinkers.

There were several miscellaneous contributions of buttons; for example, C. F. Heckert, Berlin (Class XVI.), exhibited a very good assortment of new kinds of buttons for mantles and heavy clothing.

UPHOLSTERY BUTTONS.—In Class XXXIII. (lace, net, embroidery, and trimmings) there is a very handsome display of this description of button in wool, silk, cotton, straw, and sometimes gold and silver, but they are so interwoven with the manufacture of gimps, fringes, tassels, &c., that they do not properly belong to anything else but trimmings, being very different in character from our horsehair, leather, and cloth-covered upholstery buttons.

FRANCE.

Roulinat-Lemesle et Frère are exhibitors of perhaps the least pretentious samples of French fancy dress buttons, but superior to most of the previous exhibits. Their case contained an extensive assortment, employing in their manufacture real mother-o'-pearl in combination with gilt rims, and a better kind of glass for centres.

The style of the French makers is superior, and as in some of the German cases, we have a triple combination in some of the patterns—

namely, an outer rim of metal, either gilt, oxidized, or bronzed, with a japanned centre inlaid with pearl.

The advantages in the accessories a French button maker has at his command are apparent in this case. The die-sinking of the patterns where the rims are ornamented is good, truthful, effective, and well designed. This kind of work when dead gilt has the appearance of coloured gold.

There are in this case a few Florentine buttons calling for no notice, coloured silk buttons with raised fancy surfaces, also some gilt shell four holes with bronzed centres.

E. Lemesle, Paris.—Bronze medal awarded.—This case contains scarce so great a variety, but at the same time a still superior collection, showing good taste and an acquaintance with colours that are complementary. The most striking were from forty to fifty lines for mantles with bronzed rims, centres cut from sheet glass, the same being covered with gilt sheet metal geometrically perforated.

The colours of the silk buttons were very chaste, delicate shades of blue and magenta, or mauve, with white and gold rims together with black and gold.

Another division of this case contained samples of glass buttons in plain and fancy colours—i.e., blacks, opals, and ambers. The beautiful imitation of the latter was alone sufficient to make the British glass-mixer emulous of the better stuff exhibited by the French mixers of metal.

The examples in glass buttons were few but good; the shapes known as "balls" and "dumplings" were all that could be desired. The colours in the more ambitious were good, also the accuracy with which agates, malachite, and onyx—both in the stripe and the ring—were imitated.

This case contained also an assortment of fancy vest and dress buttons, silk buttons—placed too high to be closely examined—also a few in steel, in balls, spire tops, and four holes, and naval and military buttons calling for no remark.

Parent and Hamet, of Paris (silver medal), are from their display exhibitors of a good general selection of fancy dress buttons, for the exclusive use of the fair sex, comprising plain silk, satin, velvet, terry silk, and needleworked buttons (a trade in this country peculiar to Leek, though now almost extinct); also of pearl, metal, and glass buttons, with mosaic centres. In two corners of this case were large printed cards with the following, "*Système Anglais importé en France depuis 1835; adopté par toutes les Fabriques.*"

Along with these cards were Florentine buttons in the different stages of manufacture. The saw piercer where pearl is used for centres, has by his art imparted lightness, and added additional charms to the pearl by neat and appropriate designs.

Some silk balls were shown with gilt bands encircling them, such as were sold by the English a few years ago, and other shapes oblong, with the sharp edges taken off, covered in silk; also some crystals set in claws, the latter, a button, we have never been able to do anything with, because our lapidaries are unable to produce a similar glass centre for setting at anything like the price of the continental maker, nor any

approach to the same excellence, pay them what you will, which compelled the more advanced English makers to follow the example of their French brethren several years ago, by buying from Bohemia.

Jules Plançon, Paris.—Bronze medal.—This case contained a very ambitious display, there seemed a strong desire on the part of the exhibitor to treat the material from which the buttons were made, so that it would be difficult to tell what it was. British makers of paper buttons have hitherto defied competition in japanned, the flat hard polished black paper buttons. Here were shown all kinds of imitations of gems, and ornamentation took the form of mountings in pearl, while heads of animals, classical heads, &c., carved, were very plentiful.

Lebeuf-Milliet and Co., Montereau.—Ceramic buttons.—This house exhibited an extensive and at the same time rich display, in sizes from ten to forty and fifty lines, in a few instances 100 lines; there was no attempt to produce odd or elaborate forms, but in lieu thereof, coloured ornaments were introduced. In this case were examples known in the trade as the cheapest in the market, and called China shirt buttons, often sold at 1d. per gross.

We have no markets of this kind of button in England; the celebrated house of Minton and Co., of the Potteries, and Chamberlains', of Worcester, were formerly engaged in this manufacture; the French, however, took up the trade, and are now the exclusive makers.

J. F. Bapterosses, Briare, Loiret.—"Perles," known in England as pearl agates (they are not, however, made in this country).—This case was very attractive, and the admiration of all button makers. The shapes of the buttons were few, their colours numerous, the variety of shades harmonious, and delicate in tint. This button is somewhat similar to the ceramic, with a near approach in some of the shades to mother of pearl shell.

Masse and Co., Paris.—Horn buttons.—The designs and shapes of the buttons in this case were the most numerous of the whole class of buttons of any one kind, but the opacity of the horn, or more properly hoof from which they are made, renders them unattractive at a short distance, it is only upon close examination that their merits are discovered. These exhibitors will receive credit for availing themselves of some of the best die sinkers of France. That portion of these buttons in large sizes, enables the artist to display his ability. The very fine classical heads upon some of the buttons in alto-relievo show a great amount of skill in the execution of the dies.

There is another case of horn buttons by Caillebotte and Co., who have introduced colours in indented rings, which at a short distance look both neat and effective.

J. B. Huet, Paris.—Bronze medal.—Steel buttons.—This branch of the button trade is not carried on by itself, but in connexion with the manufacture of steel tassels, and ornaments for purses, combs, &c., &c. The display of buttons in this case was meagre, consisting of examples in balls, spires and half balls in small sizes; shapes we are very familiar with, and therefore presumably favourites with consumers generally. Some few of them were faceted, and knowing how cheap these kinds, not faceted, but stamped from thin sheet steel, are sold, I am

inclined to believe that some cheaper scouring and polishing process is adopted than we have here. In Class XX. (cutlery), I found the best display of steel buttons in the Exhibition, by Maillot and Vincent Hardy, Paris. The assortment and variety of shapes were excellent, as ovals, domes, spire tops, oblongs, barrel shapes, four holes and balls from ten to thirty lines.

Neau and Lecomte, Paris.—Bronze medal.—Florentine buttons.—Exhibited a large variety of these kinds of buttons, but they were so awkwardly placed, that you could not examine them well. This house exhibits some good enamel gilt, four hole brace and strap buttons, with bronzed raised letters, and plated four holes with sunk letters, the bottom bronzed on the surface, the sunken letters showing white.

LINEN BUTTONS.—There were but two cases in the French section that contained linen buttons, Parent and Hamet's, and Hartog, Jean, and Co.'s. The first named showed a few covered-back-and-front flat buttons, the second showed samples of balls, spires, and convex, with flexible backs, and covered in diamond cloth, of a very superior quality.

The excellence of Birmingham makers in this class is not exceeded, if equalled.

Marie and Dumont, Paris.—Bronze Medal for mother o' pearl buttons.—To combine the two qualities strength and beauty, seems to be the ambition of this house, though contrary to the English practice which aims at giving beauty and strength combined with lightness. Beginning with the shirt sizes, the kind of button that employs the bulk of the Birmingham pearl workers, and noting those sizes from ten lines and upwards in two holes, four holes, convex, concave, fish eyes, &c., there is apparent an amount of strength as well as beauty, the edges are in most instances either rounded, or have a very neat bevel put upon them, the cup patterns being deeply cupped, to allow the thread to lie low. Excepting in two instances, there is an almost entire absence of ornamentation, one with a ring on, the other a fancy bevel edge with a small ball in the cup, and four holes round the ball, a favourite pattern with the French. There were many pearl vest buttons, the same pattern as the shirt, only in eighteen and twenty-two lines; also sixteen line "balls" with designs turned upon them in the lathe, very different to anything we see here. Imagine as one shape, a ball with deeply cut circles rising from the base to the apex, leaving only a core in the centre. Turning to the more artistic works in mantle buttons and ornaments, for which the French are famous, they exhibit a multiplicity of specimens of exceeding merit, in turned and carved work, cameos, precious stones and pieces of different coloured pearlshell being inlaid, and introduced in every imaginable form. The skill of the engraver, saw piercer, and painter, is called into requisition, and the inference is that a set of mantle buttons of some of the designs would cost more than the mantle upon which they were to be worn.

LIVERY AND UNIFORM BUTTONS.—There are three large cases showing what can be done in the shape of gold, silver, and gilt buttons, with the assistance of the engraver and the enameller, in producing an ornament that fulfils and serves the purpose of buttons, and at the same

time adds to the trappings of rank (as shown in liveries), and also becomes the adornment of the gorgeous dress of the court and royalty.

The brilliancy of the Court of Napoleon III., the deference that appears to pervade all classes of the French, and that is paid apparently by every grade to the grade above, will perhaps account to some extent for the development of this branch of the button trade, and the premium that patronage would offer, as a matter of course, for excellence, has stimulated all engaged in it to strive for precedence. Here the pomp of heraldry is emblazoned through the medium of buttons, and from the simplest crest to the richest coat of arms of royalty, there are examples in imperishable enamel relieved with gold.

The history of the Cæsars is read on Roman coins, the history of the French nobility of the nineteenth century will in the remote future be read on buttons.

The firms who exhibit these samples are A. Masse and Co., F. A. Bagriot, and Gourdin and Co.

They are very close rivals, but each has in addition something different to the others. A. Masse has very fine examples of sporting buttons in oxidised silver, *alto-relievo* designs, and in gold and silver, the object one colour, the background another. F. A. Bagriot exhibits two sets of buttons in fifty lines, with richly carved onyx cameos, mounted in coloured gold.

Gourdin and Co. exhibit vegetable ivory buttons with no very special merits.

Each of these firms has a large display of military and naval, civil service, and police buttons, and when it is borne in mind that France keeps nearly, if not the largest standing army in Europe, the immense trade done in military buttons will be realized to some extent.

The Cross of the Legion of Honour was conferred upon Messrs. Hartog, Jean, and Co., Paris, for the best general display of buttons, with the exception of ceramic buttons and pearls. They exhibited the most comprehensive assortment, consisting of silk, velvet, and examples of every kind of fancy dress buttons, crest, military, naval, and civil service, upwards of 5,000 different patterns. Many of the excellences that distinguish French makers who only exhibit one kind of button were here shown collectively, and especially in the department of fancy dress buttons.

It is no question of price with anything shown in this case, as it is with the competitive productions of the Germans; here is luxurious fancy indulged in, and as a concomitant, high prices.

The die sinker and gilder have unitedly produced beautiful examples of buttons for mantles, of fifty, sixty, and seventy lines, and these though very effective are not complicated in their manufacture, for instance, the head of the goddess Ceres, in a concave centre with an outer rim encircled with the ears of corn, all being either bronzed, or oxidized, except the ears of corn, which are golden; this example is all stamped in one piece, the beautiful effect produced is from the excellence of the die-sinking of an appropriate design, and the peculiar treatment afterwards by the gilder.

Coloured glass enters very largely into all kinds of dress buttons in this case, and the brilliancy and truthfulness of the colours of the glass used by the French button makers are very superior to anything we can obtain from English glass mixers, the amber, emerald, chrysolite, and aventurine, though imitations, are so many additional advantages the English button maker does not enjoy, unless like the French button maker he buys his metal from the French glass mixer.

The most novel treatment glass has been subject to is of recent origin. When had in the cane from the glass maker it is quite plain, and is, after being pinched, so treated that it has the appearance of being crackled.

The English button maker can vie with the continental in producing specimens in flint glass of equal merit, but in colours, as amber and emerald or saffron, he must use French metal. Brightness and clearness are indispensable. This case contains samples of all the colours.

CONCLUSION.—The conditions under which the button trade exists are peculiar, and very different indeed to almost every other branch of industry, but the trade is hardly likely ever to cease to be, though it is subject to extraordinary fluctuations. The buttons that are in general use, that the fickle goddess of fashion does not disturb in her erratic flights, have called into existence the most comprehensive and ingenious methods of production. This kind of trade (the buttons of strict utility) is called in mercantile phraseology "bread and cheese work," and is hardly ever pursued by a manufacturer exclusively. It is then the description of button which partakes more of the character of adornment of dress, and admits of design and artistic treatment, that the manufacturer relies upon for profitable employment of capital, and when it is remembered that every possible kind of metal from iron to gold, whether pure or mixed, every conceivable woven fabric from canvas up to the finest satin and velvet, every natural production capable of being turned, cut, or pressed, as wood, horn, hoof, pearl, bone, ivory, jet, cocoa nuts, &c., every manufactured material of which the same may be said, as caoutchouc, leather, papier maché, glass, porcelain, &c., has entered more or less into the manufacture of buttons, and some of them constantly, it will be readily understood from the full scope that is here offered the maker, to add by skilled labour and design to the value of material which in its native state is in many cases of but very little value indeed, how vitally important a supply thereof is to him.

Social customs and a difference in the habits of the French people are causes that operate much in their favour. The French artisan knows too well that without talent of some kind a miserable future is in store for his offspring; here, then, is the stimulant for the parent, the choice is in favour of art. One of my informants who had lived in England sufficiently long to become acquainted with the system pursued in our schools of art, condemned strongly the teaching of straight strokes and pot-hooks till the young student became disgusted, abandoning for ever the study.

A French boy has a piece of chalk put into his hands upon first entering their schools of art, and thus he is at once enanoured, and his task becomes a labour of love.

We have wants still to be supplied,—first, an entire change in the

system upon which our schools of art are now carried on, for one that will make them more popular. The fact of one school of art alone sufficing for, or rather managing to exist in Birmingham administering small doses of art to about 1,000 students, while there are at least ten times that number who are standing in the greatest need of art knowledge, shows how much remains to be done.

If a knowledge of the different periods of art, and of the styles incidental to those periods came intuitively, we might go on and prosper notwithstanding the entire absence of examples of them at Birmingham. We might complacently in the future, as we have in the past, look on the rich and ever-accumulating storehouse at South Kensington; yet, so far as Birmingham is concerned, the influence of South Kensington is about the same as if it were in Abyssinia.

No calamity that can possibly be foreseen can befall the 700 different trades of our town that befell the industry of the textile district, but ere long, our greatest difficulty will be a glut of unskilled labour, an inability to cope with the highly-trained and technically-educated mechanics and artisans of the Continent.

BUTTONS.

By WILLIAM BRIDGES,

BUTTON-TOOL MAKER, BIRMINGHAM.

IN proceeding to make this Report I was met at the outset by difficulties in the way of inspecting the French factories, tools, and processes which could not be overcome.

The Secretary to the English Commission sent out requests for permission to view the process of button-making at some of the manufactories, but was unsuccessful. My mission was, therefore, shorn of a great deal of its anticipated usefulness. As a last resource, I received from M. Haussoullier a document authorising an application to Messrs. Hartog and Co., founded upon a promise by letter from that firm previously sent to the Commission for assisting deputations of mechanics visiting Paris, stating that repairs were going on at their establishment, but, if completed in time, permission would be accorded to authorised applicants to view their works. However, two applications in person proved unavailing to gain a view of even a portion of the interior.

Failing, therefore, in being brought in friendly contact, under official auspices, with either masters, works, or men, and thus getting direct information, I cull the following figures from the official catalogue, introducing an approximate equivalent in English value. The number of operatives employed in Paris in the manufacture of buttons is 22,000—8,000 men, 10,000 women, and 4,000 children. The rate of wages paid to each averages 4fr. 25c., or about 3s. 6d. per day, for men; 1fr. 85c., or 1s. 6½d., for women; and 1fr. 10c., or 11d., for children, which latter item appears high, unless the age is an advanced one.

The quantity of metals used annually is 2,500,000 kilograms, or about 2,370 tons, of the estimated value of 4,000,000fr., or 160,000*l.*, the quantity of silks and other fabrics required being computed at about the same amount. These figures are very striking and suggestive when it is taken into consideration that from a comparatively insignificant and unimportant branch of industry it has taken little more than a quarter of a century to develop its huge and marvellous proportions, the extent of which may be readily understood when it is known that the estimated value of buttons manufactured in Paris and the district annually reaches the enormous sum of 45,000,000fr., or 1,800,000*l.*, two-thirds of this amount being for export.

During the time of this rapid progress on the Continent but little advance has been made in this branch of trade in England, which may be

accounted for in the following manner:—The gilt and plated portion of the button manufacture, formerly very extensive and important, though still carried on in England with spirit and taste, and, as heretofore, producing work that will compare with the manufactures of any other country, has fallen off to a very great extent, owing to the changes in fashion, and the comparatively high price of such buttons having much diminished the sale; and although the void has been largely, and even more than thoroughly, filled up by the manufacture of covered buttons, which supplanted it, our manufacturers, by the growth of the trade out of England, and being mainly confined by hostile tariffs to the home demand, and not being favourably situated as an *entrepôt* for *articles de luxe*, for which Paris is so universally visited, have not been able to secure that hold of the new trade in buttons for mantles, robes, and dress ornaments which has grown up all over the world within these few years, and which has mainly contributed to the enormous increase of the continental manufacture. There is no other reason but position and hostile tariffs why this Indies' trade, which is carried on with success for the domestic demand in England, should not increase, and it rests with the manufacturers themselves to make their productions better known. The quantity and variety of buttons which are to be seen in the Exhibition far exceed any previous display of the same kind of articles; yet all the kinds shown are, in the main, exceedingly well finished, which might be expected for such an occasion, but possess neither originality nor novelty. Nearly every kind of button exhibited can be produced by the leading manufacturers of Birmingham equal to the best specimens, if not, in some cases, superior.

As might be expected from so great a development of the trade in France, and a still larger in Germany, the exhibitors of buttons are very numerous, in the aggregate about thirty, one-half of whom are from Paris. The goods are well arranged, and displayed in cases fitted up in an uniform and tasty manner. Subjoined is a full account of all that comes within the scope of my instructions—viz., of exhibits in metal buttons, machinery, and ornaments.

Messrs. Gourdin and Co., Paris, No. 172.—This establishment shows a well-finished assortment of gilt, livery, foreign military, and for continental colleges. There are some specimens of belt furniture for foreign officials, beautifully finished, but very expensive. Samples of dies and hubs are shown, and splendid works of art they are. Unlike the dies usually employed in Birmingham, they are turned plugs of steel, about 1½ in. in length. It is by no means a new plan, but a method not usually adopted by manufacturers here.—Silver medal.

Messrs. Hartog, Chas. Jean, and Co., late Trelon, Weldon, and Well.—A very superior case, containing, besides the same class of goods as Messrs. Gourdin's, a good variety of many other kinds, such as solid and shell brace buttons, fancy gilt, and plated and enamelled vest buttons, and some curious drop buttons, with tag and chain; metal fancy drop ornaments, as balls, hearts, acorns, &c.; also belt furniture, buckles for trousers, vests, and braces, and clasps. The sporting buttons have been struck from dies of great depth. A frame of plugs or dies in this case are fine specimens of die sinking. In the lower part of this case is

seen an endless velvet band, or revolving pattern card, studded with a pleasing variety of buttons, and kept in motion by means of a mechanical contrivance.

Duchel et Fils, Paris, No. 170.—Referring to the horn buttons exhibited by them, some of the coat sizes have been moulded in dies, which are masterpieces in the art of die sinking. The heads, which are very deep, have the appearance of being undercut, although it is not so.

Masse, Paris.—A small show of well-finished fancy gilt and plated and oxidised, also enamelled gilt, chiefly small sizes, and some ball drops, the enamel imitating very closely the genuine process. They likewise show some ordinary brace buttons.

Roulinat, Lemesle, et Freres, Paris, No. 182.—This case, on the whole, is not very good, although it contains some excellent rim buttons, with choice glass centres. They look exceedingly well, but are very costly. There are, besides, shell brace buttons, tolerably good; some fancy coat-size, gilt, with common-place chasing upon some of them.—Bronze medal.

J. Huet, Paris, No. 183, shows an assortment of steel goods, comprising flat and other shaped buttons, some cut and studded; also, shell and solid plain and faceted ball buttons, glove buttons, and buckles and ornaments, silk trimmings ornamented with steel beads, and some fancy ball buttons made from sheet metal, rolled with a fine pattern on the surface, as is usual with the English common-figured metal balls.

Lemesle, Paris, No. 180.—Among other goods this case contains solid brace buttons, gilt-plated, and japanned; also a quantity of fancy gilt-plated and oxidised metal balls, and plain burnished ditto, of an average quality.

Messrs. J. M. Caron and Co., Rauenthal, Barmen, No. 10, have a very extensive display. They make a leading feature of a series illustrating the productions of their firm from 1819, showing the progress made every ten years. From 1819 to 1829 there are coat and breast gilt buttons, plain, flat, and convex; from 1829 to 1839, wrought coat and breast gilt, good specimens of stamping, particularly some to imitate chasing; from 1839 to the present time, all kinds of gilt, in various designs, and well made. Besides the above, and a great quantity of composite buttons for ladies' dress, they show plated and gilt metal buttons, covered with black bronzed sheet metal, with ornamental perforations, which reveal the bright underwork in contrast; flat metal buttons, with sunk ornaments, the ground, or unornamental part, being bronzed black, and the ornament gilt or plated; also, small metal ball buttons, made from fancy rolled metal, and some gilt-plated and japanned shell brace buttons, all of which are well finished.

P. S. Furk, Leidenscheid, Westphalia, exhibits ball, spire, and other fancy buttons, made from the fancy rolled sheet metal before-named, and bronze-trimmed buttons, in which that metal is used for the top or face, and varied by the introduction of inner concentric rims, and the use of different bronzes; sporting and livery buttons, with sunk ornaments, as crests, sporting subjects, and geometrical figures, in which, as in Caron's case, the ground or unornamented part is bronzed black, and the ornament gilt or plated for contrast. This case also con-

tains brace buttons and a few steel buttons, flat and balls, mostly faceted or cut; buckles, brooches, and clasps, plain and cut, of fair quality and finish, such as have been made for many years in England.

Veuve Léonard Ritael, Westphalia. --In this case, besides other buttons, there are a few livery, some gilt and plated, and some fancy bronzed buttons, well made.

L. Kolbe and Co., in Bessungen bei Darmstadt Grossherzogthum, Hessen, with a great variety of composite buttons, exhibit some livery and military buttons, which are not very well made.

An exhibitor from Moscow, Class XXII., shows a small frame of gilt and ball, with a few samples of gilt coat and breast shell buttons, well finished, and a few gilt slides and buckles, of a common-place character.

MACHINERY.—The machines of J. Plançon, Rue Moret, Paris, for cutting, piercing, covering, and finishing, are the only ones in connexion with the button manufacture. The machine for cutting and piercing is the only one to be seen in the Exhibition. It is a very large one for cutting out button blanks, being about one and a-half yards in length and one yard in breadth, and cuts two ○ ○ at the same time. This machine is also intended for cutting out heavy work, such as fittings for ironmongers, &c.—Price, 4,000fr.

The supplementary machine, for forming, marking, and covering, was kindly shown by M. Plançon, at the works of M. Berthier, constructeur mecanicien, Rue St. Maur, No. 65. It is a more compact arrangement than the one for cutting and piercing, not taking up more than one-third of the room. It was in an unfinished state, so the plan has not yet been properly tested. The inventor does not undertake the making of the requisite tools. It is intended to cover ten buttons with one motion. In front of this machine is a table, or plate, about three-quarters of a yard in length, by $2\frac{1}{2}$ in. wide; in this table, or plate, are ten holes, the size of those in one-half of the covering dies, that receive the shell and cloth. The upper parts of these holes in the table or plate are countersunk the thickness and size of the cloth required, then a slip of steel, the size of the table, and containing the same quantity of holes, but only large enough to allow the shells to pass, is hinged on to it. After the discs of cloth are properly arranged in the countersunk portion of the table, the strip of steel shuts upon them; the shells are then put into the holes in the strip of steel, and by this means the shells and discs of cloth are retained in their places while being taken to those portions of the dies containing the backs and shanks; the buttons are then finished. The speed of the machine must be regulated according to the time taken in charging, which is done by hand. It is a very useful-looking machine, and requires but little space. In the unfinished state that it was seen, this is the best description that I am able to give.

The same machine, or the same kind, that is used for covering is intended, with a different arrangement, to serve for drawing through, raising, marking, &c., so that a series of machines would be required to produce a quantity of buttons worth notice, at a cost of 14,000fr., the price of the machines last-mentioned being 5,000fr. each.

STEEL ORNAMENTS, &c.—There are not many samples of steel

buttons in the Exhibition. The fancy articles in that metal, however, are very numerous, but consist almost entirely of buckles, purse and bag snaps, trimmings, ornaments, or steel jewellery, which includes brooches, clasps, ornaments on combs, coronets, bracelets, ear pendants, &c., all the latter class being more or less composed of studs, riveted on plates of metal previously cut into artistic designs.

Ornaments used for trimming or decorating vestments, such as would be produced by button manufacturers, and likely to be required in quantities, are not exhibited. I could not discover one article that would not come under the head of jewellery, or gilt toys, consisting as they do of charms, locketts, chains, beads, ornaments for the hair, &c.; also, gold, silver, and plated jewellery, for peasants, devotional articles, &c.

CAPSULES.—The only capsules shown are those of Messrs. Betts and Co., City-road, London. This article is so universally known as being the only one of the kind in great demand, that it is unnecessary to remark thereupon, as the extensive and minute specifications and elaborate drawings of the machinery are to be seen at the Midland Institute, Birmingham, and likewise at all institutions having a specification library.

STEEL PENS.

By J. L. PETIT,

SUPERINTENDENT OF STEEL PEN WORKS, BIRMINGHAM.

THE pen, in all ages, has been the means of conveying the ideas of one person to another, the bridge that spans from mind to mind, an inanimate tongue, that, giving shape and form to thought, speaks to the present, the future, and of the past. It has played an important part in the history of the civilised world ; so much so, that one of our greatest writers has said, "The pen is mightier than the sword." In education it takes no mean share, commerce and literature would come to a deadlock without it, and in its manufacture it gives employment to thousands ; yet the editor or commentator of the official catalogue of the French Exhibition has not thought it worthy of a single remark. It is also strange that in the classification it is not mentioned separately, but it is classed with a number of other articles, under the head, "Writing Materials." The gentleman mentioned above may not know what an important article of trade the steel pen is, or what it is likely to become.

Forty years ago the steel pen was manufactured more as a novelty than as an article of trade. Since that time the trade has so increased, and the manufacture has so improved, that in the town of Birmingham alone there are upwards of 100,000 gross, or 15,000,000 finished pens manufactured per week. It gives employment, directly and indirectly, to nearly 4,000 people, and consumes, upon the average, fifteen tons of steel per week. There are ten manufactories in England, four in France, three in the United States of America, one in Austria, and one in Prussia. Forty years ago steel pens were retailed at 1s. each ; 144 far better pens can now be obtained retail for the same money. The trade has continued to increase and flourish from its commencement, and there seems every probability that it will continue to do so for ages to come ; it is a trade for all time, being purely an article of utility, and not susceptible to the caprice of fashion. It will flourish when many a trade has sunk into oblivion ; it will still live when the sword, the needle gun, and the Armstrong are things of the past. Macaulay's New Zealander will write the description of his visit to the ruins of modern Babylon with a steel pen ; it will make and unmake kingdoms ; and when reason predominates over ambition and passion in the mind of man, it will be the instrument to sign the blessed decree sung of by poet and hoped for by man—that the warfare of earth shall cease.

I commenced my examination of the steel pens in the Exhibition on

the 17th of August. Thanks to the admirably-arranged plan of the building, I soon found myself in the

BRITISH SECTION.

Group 2.—Class VII.—I was astonished to find that out of the ten actual steel pen manufacturers of Great Britain, viz. :—

	Messrs. Baker and Finemore,	Birmingham,
*	" Brandauer, C.,	ditto.
	" Brueton, Fowler, and Co.,	ditto.
*	" Gillott, Joseph, and Sons,	ditto.
*	" Hinks, Wells, and Co.,	ditto.
	" Mason, Josiah,	ditto.
	" Mitchell, John,	ditto.
	" Mitchell, W.,	ditto.
*	" Myera, M., and Son,	ditto.
*	" Turnor, M., and Co.,	ditto.

only the five marked with asterisks have exhibited.

I shall remark upon the exhibits in the order they are placed in the catalogue. The first is No. 4, the case of Mr. C. Brandauer. This case is placed in a very bad position, and is the only one in the British section that is hung on wall space, which is very much against it. It hangs over the case of gold pens by F. Mordan, but the distance from the eye of the observer makes it difficult to examine very closely.

It is decidedly the best in design and artistic arrangement of all the pen cases. A large star, formed of gilt and silvered pens, thrown up in bold relief, is a prominent feature in the case; also the medallions of the Emperor and Empress, with gilt and silvered pens radiating from them, the pens used being one with the figure of Napoleon and another with the letter E embossed upon them. Underneath the medallions of the Emperor and Empress are the letters E and N, composed of very small pens; more than a gross of these pens can be put into a small hazel-nut shell, yet they are made and finished exactly the same as an ordinary-sized pen, and can be written with, making a very fine stroke indeed.

A border, with rays projecting towards the centre, and formed with a great number of pens, varying in size, design, and colour, runs round the case. Numerous small stars and other devices are arranged about the case, and at the bottom are some monster barrel pens, very nicely pierced, engraved, and polished. The largest of these pens (about two feet in length) was slit in the same press and with the same tools that the small pens mentioned above were split with. This shows the quality of the machinery and tools used, as the thickness of the steel in the small pen is about the 600th part of an inch, and that of the large pen about the twelfth part of an inch. The slitting shown by this firm is, at least, equal to any in the Exhibition, and is a branch to which they pay special attention. An example is shown in some pens which have six slits, each slit being perfectly smooth, and all the seven points of one uniform size and length, the beauty of which can only be seen under a powerful lens. This, although not attractive to the eye, is the most important part of pen making, and ought to have more care bestowed

upon it than the more showy branches of piercing and ornamental raising. The piercing in this case is also very good. The most noticeable examples of piercing are shown in some large magnum bonum pens. There are of these three different designs, all nicely executed, and also some very pretty holder tips. The ornamental raising is also very good, particularly a pen with a fox's head forming the centre of the pen, the hair being as sharply defined as though it had been chased. There is also a very handsome display of lapped pens and holder tips, also some richly-engraved pens, the sunk parts being gilt, and the surface a rich blue colour.

Three new pens in this case deserve notice, one, a pen called the "Gladstone," having the points curved to the left, presenting a rounded surface to the paper in writing, instead of the sharp point. This prevents spluttering or spurting. Another, specially adapted for short-hand writers, and another for lithography, or writing on stone, the steel used in this pen being only one-hundredth part of an inch in thickness, and the points as fine as the finest needle. The grinding is also very good.

No. 12 in the catalogue is the case of Messrs. Joseph Gillott and Sons. At first sight I was disappointed with this case, expecting to find it a most beautifully arranged one, instead of which it is quite a utilitarian affair, yet well adapted for the purpose. However, my disappointment soon gave way to pleasure, and I may say pride, when I began to examine the pens in the case; and I thought that if the French pen-makers beat this, they have made astonishing strides since 1862. I found everything in this case (as far as I could examine) first-class, but some special articles are really most beautiful works of art. There is a long row of large pens, very slightly raised, running across the case, which are very fine specimens of pierced work, and also of steel colouring; but the "chef-d'œuvre" of the case and of the whole exhibition of pens, is a pierced magnum bonum pen blank, in an oval ivory frame. It is by far the finest specimen of pierced work I ever saw, beautiful in design, and matchless in execution. Amongst some very rich scroll work, the English coat of arms is introduced, and within such a small space, it seems almost wonderful how it has been done. I am informed that one of the young Mr. Gillotts made the whole of the tools, in fact is the artist of this most artistic piece of work; it is, in my opinion, deserving of the highest award that could be given. Some pierced magnum bonum pens in the finished state (except slitting) look uncommonly well, especially one having diamond-shaped pieces pierced out, leaving but a very fine bar, like a wire, between each. It would be impossible to enumerate all the beauties contained in this case. Among a number of other excellent things the grinding stands pre-eminent; this is a branch of the trade they excel in, and certainly the specimens they exhibit prove that they stand unrivalled in this branch. Some of the narrow belts round the large barrel pens, and the small crowquill pens, are perfect, and it would be a good thing if all grinders could see these pens, and learn what it is possible to do in the way of grinding. They make but a very poor show in ornamental embossed pens, most of their ordinary pens being plain; but what little they do in this class of pens

is very good, the Eugenie pen for instance, being in style and finish a pattern of excellence. They do not copy or imitate other makers' patterns, as some manufacturers do.

No. 15 is the case of Messrs. Hinks, Wells, and Co. It has rather a pretty effect, very plain but striking, it consists of elliptical rings, the design of the Exhibition itself. There is very little in this case to call for special remark, but there are a few large magnum bonum pens moderately well pierced. They also show some ornamental pens that are pretty good, also a few engraved pens. In the centre of the case are two large embossed pens gilt, one having the head of the Queen, the other that of the Emperor, embossed in the centre.

No. 19. The case of Messrs. Leonardt and Catwinkel, who show a variety of pens, holders, pen boxes, and needles.

No. 22. I ought, perhaps, to pass this case, being that of Mr. F. Mordan, London, who is a "gold" not "steel" pen-maker, but one article in his case deserves mention. He exhibits a very good assortment of gold pens, and the most beautiful penholders I have yet seen. They are made in silver, and silver gilt, the design or pattern is a fac-simile of the old goosequill pen when cut and trimmed for use. The feathering is most beautifully executed, and they are also very richly jewelled round the quill part of the holder, altogether having a very handsome appearance.

No 23. The case of Messrs. M. Myers and Son. The upholstery of this case is very rich in colour, but does not altogether harmonize with its contents. Of the workmanship of the pens exhibited, I shall say nothing. There are some very strange shapes among them which may be mentioned as the skeleton pens, but I cannot compliment them upon the beauty of their designs in general. They exhibit a very good assortment of holders, and they exhibit what appears to be quite as much in their way as steel pens, viz. an assortment of railway ticket holders, book marks, letter clips, &c., which takes up one half of their case.

No. 24 in catalogue. Messrs. J. Perry and Co. exhibit a quantity of stationers' sundries, amongst which are a number of pens.

No. 27. The case of Messrs. A. Sommerville and Co. In this case are exhibited a number of pens, boxes, needles, &c.; the first named do not call for special notice.

No. 29 in catalogue is the case of Messrs. M. Turnor and Co. This case is an improvement upon the one exhibited by this firm in 1862, especially in design, but is not what it might have been made. In the back part of the case (which, like several others, is something similar in shape to a cottage pianoforte), there is formed a large star, composed of pens and penholders, but it is very flat, the centre by all means ought to have been raised higher; it would then have looked very well. There are some good things in this case, particularly the ornamental pens, of which there are several new designs. There are also some good engraved pens, and the colouring is also good. I was very much disappointed at not finding the pierced work in this case what I had anticipated. Knowing what had been done by the head of this firm some years ago, I fully expected them to bear off the palm in that

branch, but what they do show is good. They also exhibit a number of metal pen-boxes, for which they hold a patent.

French Section.—Group 2. Class VII.—No. 167 in Catalogue. M. V. Monchicourt, of 26, Rue de Valenciennes, Villette, Paris, shows a case of pens, holders, &c., of an ordinary character.

No. 168 in catalogue. Messrs. Blanz, Pouré, and Co., of Boulogne-sur-Mer, show the finest case in the French section. They have some nice engraved pens, some coloured in various ways, black and gilt, &c.; they show great taste in this kind of colouring. They exhibit also some pens which I suppose are intended for reservoir pens, they have a slip of narrow steel running underneath the point. I have tried this pen, and to some extent it answers the purpose, but the writer must not be astonished if it blots the paper now and then, a failing that most of the so-called reservoir pens have, whoever the maker may be. The ornamental raising is pretty good, as also is the piercing. There is a very fair display of holders in this case.

No. 169 in catalogue is the case of M. P. F. Lebeau, Senr., of Boulogne-sur-Mer. I cannot say much for this case, and I see many imitations of other peoples' designs in it; holders nothing particular.

No. 170 in catalogue is the case of Messrs. Libert and Co., of Boulogne-sur-Mer. They show a very good assortment of ornamental pens, there are a greater number of new designs in this case than in any other, and they are raised better than most of the pens in the French section.

No. 171 in catalogue. The case of a M. J. B. Mallat, Paris, who exhibits a nice assortment of gold and silver mounted holders, and some pens.

Prussian Section.—No. 23 in catalogue is the case of Messrs. Heintze and Blankertz, of Berlin, who merely exhibit a few ordinary cards of pens.

United States Section.—Mr. J. B. La Mothe, New York, exhibits some fountain pens, not very remarkable.

Having examined all the cases of steel pens exhibited, I feel bound to say that there has been very little advance made in the steel pen trade since the Exhibition of 1862; I mean on the whole; but there are individual cases where the advance made has been very striking; for instance, in the case of Mr. C. Brandauer in the British Section, and that of Messrs. Blanz, Pouré, and Co. in the French Section. I should not like to say what advance Messrs. Gillott have made without comparing the two cases; but, from memory, I should say they too have advanced. There is some really beautiful work exhibited, and some very bad, both in design, workmanship, and finish.

It is a great pity that more of the English steel pen manufacturers have not exhibited, as it is only by comparison at these Exhibitions that we are enabled to judge what the different firms are capable of doing, and whether those makers, who have attained a reputation for excellence, are striving to hold, and do still hold their position, or whether other, and perhaps younger firms, have not surpassed them in quality and workmanship.

The great difficulty that I have had to contend with in this examination has been that all the cases are closed, and almost every pen is

fastened down. In any future Exhibition I would recommend that the exhibitors of steel pens send for examination, independent of those in the case, a number of loose pens similar to those in the case; also that two thoroughly practical pen makers attend the jurors as experts; these persons, if possible, to be chosen from firms not exhibiting. There is another reform needed, that is, no person but a legitimate manufacturer should be allowed to exhibit. It is not a bad thing for a dealer, or even shopkeeper, to send a pattern-card of the whole of his goods to a place where they will come under the notice of millions of people. No manufacturer does this; he may exhibit a few articles of ordinary make, but generally he makes an effort to attain as near perfection in design and workmanship as he thinks possible, and does not make a mere pattern-card of his case. I think it a scandalous shame that such things should be allowed. In this class, while an actual manufacturer, second only to Gillott in the quality of the goods he exhibits, and who, in carrying out the wishes of the Chamber of Commerce, very modestly applied for the smallest amount of space it was possible for him to use, either table or wall-space, has allotted to him wall-space (certainly the amount of space he has asked for), and which he fills with the smallest case exhibited, other persons, who have no right to exhibit at all, have a large amount of table-space allotted to them, even as much as Messrs. Gillott; so that a mere dealer obtains a first-rate position, and plenty of room for his case, or pattern-card, whilst a first-class manufacturer's case is placed in such a position that it scarcely can be seen. This is simply downright injustice, and sufficient to disgust any manufacturer, and prevent him from ever thinking of exhibiting again.

I suppose there was not a gold medal at the disposal of the jurors for steel pens; if so, I can only say it is a burning shame. Leaving sentiment altogether out of the question, where will they find an article of more universal use? I could mention articles of far less importance, for which gold medals have been awarded; articles that will assuredly die out in the course of a generation; yet the steel pen, an article of all time, has to put up with a silver medal for its highest reward. If the silver medal had been the highest award because the articles exhibited were not so good as under ordinary circumstances might have been expected, I could very well have agreed with the jurors; but what person having any knowledge of the steel pen trade can say that they ever saw, or even conceived, anything finer in workmanship than the piercing and grinding in Messrs. Gillott's case, or the slitting of the six-slit pen in that of Mr. C. Brandauer?

I most emphatically say that some of the work in Messrs. Gillott's case is superb, is a marvel of workmanship, to be admired and copied as a pattern of excellence; and, if they deserved any award at all, it was two gold medals, one for their exquisite piercing, and the other for their work in general. Mr. C. Brandauer ought to have obtained a silver medal at least; and if Messrs. M. Turnor and Co. deserved a medal in 1862, I should like to know upon what grounds it is withheld from them now. I should also like to have seen a medal awarded to Messrs. Blanz, Poure, and Co., as they are certainly at the head of the French

manufacturers, and have much improved since 1862, exhibiting some very good samples of work.

By comparison, I think the French have made a greater advance in the way of improvement since 1862 than the English, but that may be in consequence of there being more room for improvement on their part. The sitting of the French makers is their weakest point, and this is in some instances (as far as I was able to judge) very bad. To be better satisfied upon this point, I obtained some samples of all the French makers, and I found that in this branch they are far behind some of the English makers. There is also plenty of room for improvement in the designs of their ornamental pens.

I may add here that the four steel pen manufactories in France employ about 2,000 pairs of hands. That of Messrs. Blanz, Pouré, and Co., of Boulogne-sur-Mer, now the largest steel pen manufactory in the world, employs nearly 1,000 pairs of hands. There is very little self-acting machinery used by the French in the pen trade, even less than is used by the English, and only for the same inferior class of pens.

They are indebted to this country for their supply of steel, but the protective tariff of the French enables their manufacturers to compete pretty successfully with ours in the French market, but in that market only. There is also another cause for this, which is the low price paid for labour, and the greater number of hours workpeople are employed. It is to be hoped that the Continental workmen will soon learn that ten hours out of the twenty-four are sufficient for labour, and *that* for only six days in the week.

In most trades we are far behind the French in design and ornamentation, but in the steel pen trade they are behind us. It will not do on that account to rest upon our oars; if we do, we shall soon be last in the race. The French are advancing fast upon our heels, and it will only be by strenuous efforts that we shall keep our present position, or even hold our own.

The steel pen trade is but in its infancy, and if the taste of the artisan who ornaments and gives form to the pen is not cultivated, twenty years hence we shall be making the same patterns that have been made for years. It is true the French have not brought their proverbial taste to bear upon the steel pen yet, but it must be remembered that it is quite a new trade to them, as, till within the last few years, only English toolmakers were engaged. But is it to be supposed that the French, who have always the beautiful before their eyes, who, as a rule, see more beautiful forms in one day than we do in a month, who have it in all their churches, museums, picture-galleries, palaces, and streets, and even in their cemeteries, to all of which places they have constant access—is it to be supposed that these people will long be satisfied with using, daily and hourly, an article that is frequently downright ugly, and very rarely indeed shows any signs of beauty? If they are satisfied for any length of time, I can only say they will belie their own nature. But they will not be satisfied; and as all their artisans are to some extent artists, and have every opportunity for improvement, I fully expect in a few years to see a wonderful advance made by the French in

the ornamentation of the steel pen. With the English it is very different. I am surprised at it, but it is nevertheless true, that the English public do not care about ornamental pens. They seem to think that such are not so good to write with as the plain ones; but there is no earthly reason why an ornamental pen should not be equally as good for writing purposes as a plain one; and what person of taste would not prefer a beautifully formed pen to a plain and perhaps an ugly one, provided that both could be obtained at about the same price?

The fault to some extent may lie with the designer. In fact it does, for some of the designs of ornamental pens are anything but beautiful. At the same time the taste of the public is at fault, and requires educating as much as the taste of the designer or manufacturer.

If we are to retain the position we now hold in the trade, something must be done to improve both the skill and the taste of the steel-pen toolmaker. He must become, if not an artist, at least acquainted with art. At the present time I do not think that, with one or two exceptions, any of them have even been taught the rudiments of drawing. The question is, how is this to be done? My answer is, first, let every tool-maker in the trade enter his name as a pupil in our School of Design. The second step is not so easy. We have not got the beautiful so lavishly spread over our town as it is in the city of Paris; our eyes are certainly not bewildered with the beauty of the edifices that adorn (?) our streets and squares, nor have we a "Louvre" to ramble through at any time we please; but I think if some of the leading men of the town were to use their influence they might obtain, with a very little outlay, copies of a great number of the most beautiful works of art that this country and others can boast of, which might be placed in a local museum, so as to be accessible to the public at all times; and this I think would be productive of an incalculable amount of good.

If something of this kind is done it must tell eventually on the public taste; and as the rising generation is being educated in art to a greater extent than ever before (drawing now being taught generally, even in our national schools), we may hope, as a consequence, that the steel-pen trade, and also the other trades of this town, and of this country, will not be lost to us for the want of designers or art workers.

SMALL ARMS, ETC.

By CHARLES HIBBS,
GUNMAKER, BIRMINGHAM.

THE principal exhibitors of small guns are France and Belgium. England does not put forth her strength. It was natural to suppose that France would be first upon her own ground; but England, which should at least have been second, is not represented in a manner at all in proportion to the importance of one of her oldest staple trades. Her exhibits, too, have the additional great disadvantage of not being in their proper place inside the building, but in two wooden sheds in the grounds, occupied by the English War Department, where they figure under the head of Public and Private Munitions of War. Still, in what she does show, she by no means disgraces her reputation; but her collection is not so complete as that of Belgium, or so ornate as that of France; while, from its unfortunate position, it is certain to be overlooked by ninety-nine people out of every hundred who have no special object in seeking for it; and, for those who have, an additional obstacle lies in the fact, that the official catalogue contains no indication whatever that might assist the search.

Of the other contributors to this section, Prussia, Austria, Holland, and the United States stand next in importance. Turkey has a large number of exhibitors, but the articles exhibited are few, and chiefly of an ornamental character. Spain, Italy, Russia, Sweden, Norway, Denmark, Switzerland, and even Morocco and Tunis, also appear; but the interest, to an Englishman, centres chiefly upon France and Belgium: for it is from those countries that competition is most to be expected, or rivalry feared. The number of exhibitors in each country that we have any need to notice is as follows:—France 77, Belgium 22, England 20, Austria 16, United States 11, Prussia 6, Holland 3.

FRANCE.

We have it on the authority of the official catalogue that France produces arms and ammunition to the annual value of fifteen million francs. Two-thirds of this gross amount is represented by guns and bayonets, the remainder by side-arms, caps, and cartridges. The number of work-people employed in the *whole* trade is stated to be 15,000. The principal seat of the gun manufacture is at St. Etienne. I presume it is to Paris what Birmingham is to London, the great bulk of the work being produced there, while the better kinds are sold, and some of them made, in

the capital. The iron and steel used in the manufacture are both produced in France, and the cost is stated to be 33 francs per cwt. for iron, and from 47 to 80 francs for steel. The catalogue calls attention to the fact that steel is extensively used in the place of iron for the barrels of rifles and other arms; that it forms about three-fifths of the material of all the arms manufactured in France, and that the quantity used is estimated at 2,500 tons per annum. The wood for the stocks is also grown in France, and the cost when cut up is given at 2 francs each for military, and 8 francs for sporting guns. Many changes in the methods of manufacture are noticed as having been introduced since 1855; among others the more extensive employment of machinery, in which it is confessed that England and America preceded and beat them. "But," says the Catalogue, "our manufacturers have followed boldly the example of those two nations, and march in their footsteps with courage and success."

The same authority says:—"The manufacture of arms (in France), considering its importance, and the amount of the trade, is not yet sufficiently developed; but sensible progress has already been made, and the impulse which circumstances have recently given to the production of military arms is aiding us to bridge over more rapidly the distance which separates us from the more advanced nations." It then goes on to claim for France the right to stand in the first rank for highly finished arms, and also for priming and cartridges. The writer of this article is Alexandre Fouquier, member of the Committee of Admission of Class XXXVII., which includes all kinds of portable arms.

Of the works exhibited, by far the greater portion are sporting guns, and two-thirds of these are by Parisian makers. Those which have the first claim upon our attention, from their profuse ornamentation and artistic merit, are called *armes de luxe*. With us a gun, however costly, is not usually considered susceptible of much artistic treatment. It is only in the engraving, or perhaps in the symmetry of its outline and general contour, that anything beyond simple perfection of workmanship and material is looked for or thought to be desirable; and, indeed, considering that it is intended to be used, and used out of doors, any expensive ornamentation that would be liable to damage from exposure to the weather would seem to be out of place. English makers, therefore, when the highest standard of excellence (for shooting purposes) is once attained, aim mostly at neatness in the outside finish, and rarely concern themselves with any elaborate decoration that would simply add to the cost. French makers, on the other hand, in this, as in most other branches of industry, so far as I could see, seem glad of any opportunity to introduce ornament; conscious, probably, that therein lies their great strength, and the department of all others in which they maintain an incontestable superiority. It is desirable, no doubt, that the manufactures of each nation should have their distinguishing characteristics; that each nation should have its own style of work; and that one should not slavishly copy the other. My idea is, that each should endeavour to carry out its own speciality to the utmost perfection that can be attained; and this emphatically applies to outside appearance, because that first catches the eye

of the customer. In this particular, as before remarked, the English gun-maker aims at neatness, the French at lavish decoration.

In their *armes de luxe* this principle is pushed to its utmost limit, and the fancy of the artisan, or, more properly speaking, the artist, revels uncontrolled. I almost hesitate to describe these rare and beautiful works, for fear of not doing them justice on the one hand, or seeming hyperbolic on the other. The most fantastic forms are carved, not only in the wood, but also in the iron and steel. The locks, especially, are sculptured in the most elaborate manner, sometimes with conventional foliage running into open scroll work, sometimes natural foliage with figures of animals introduced, but always with consistency and harmony, and great artistic merit. I saw one specimen—the lock plate covered with a leafy design of great beauty, from which sprang a forked bough, with a squirrel upon it munching a nut; the bough was the hammer, the bushy tail of the squirrel formed the thumb-piece, and the nut, cut off across the middle, was the part which struck the nipple. The whole was in the most exquisite taste, and the modelling perfect. Not only was the form of the animal true to nature, but there was a roguish expression in his features which bespoke the true artist's feeling for his work. The chasing was magnificent; the texture of the leaves, the bark upon the bough, and the soft bushy fur of the squirrel expressed with distinctness and truth. Another specimen, somewhat similar in conception, represented a fox with a bird in his mouth; the furtive, stealthy expression of the animal conveyed in every line of his figure. Another design was of a more classical character. The hammer represented a dolphin, his tail coiled around the tumbler-pin, and his open mouth striking the nipple. A female figure astride his shoulders formed the projection for the thumb. A pistol executed for the Emperor—a photograph only of which is shown in the Exhibition—is a most elaborate specimen of this style. The lock, the barrel, the furniture, and the stock are carved profusely with representations of the wars of the Crusades; mostly in high relief, but wherever possible upon the projecting parts, sculptured entire. The number of figures absolutely bewilders the eye. The hammer is formed of two figures; a Christian knight in armour holding a Saracen aloft, and in the act of hurling him head foremost upon the nipple. These two figures being much larger than those sculptured upon the plate, and yet springing from it, and forming part of the subject, constitute a manifest incongruity; but it is the only thing to cavil at in the whole composition. It is throughout instinct with life and vigour—the groupings varied, the action forcible and natural, and the story well told; and, whether the material sculptured be the ebony stock, the silver furniture, or the iron or steel of the lock and barrel, the same perfection of detail and execution is achieved.

Sometimes a scroll ornament simply is thus carried out over the gun. Instances of this kind abound, some distinguished by freedom and boldness, others remarkably chaste and neat, but, as a rule, running into open and solid sculpture wherever the construction admits of it. A breech-loading double gun, also made for the Emperor, and exhibited by Gastine Renette, is a fine specimen of this class. The ornament is continued

over the stock, and, indeed, all over the gun; yet it does not appear to be overloaded, so chaste and tasteful is the design. The most profusely decorated piece in the Exhibition is one shown by Ferdinand Claudin. It is one mass of the most elaborate carving from end to end. The stock, which is of ebony, is cut bodily into a leafy scroll, interspersed with incidents of the chase. The ironwork is treated in the same daring manner, no form appearing too difficult for the artist to portray and show his perfect mastery over the material. These productions naturally arrest the attention, not only because this style of decoration is new to us, and an evident speciality of the French, but because, so far as I know, the principal feature in it—the carving in iron—is an art not practised in this country. I believe that in France it is by no means confined to the decoration of guns: it is no part of gunmaking proper, but the artist is free to, and does frequently, exercise his talent in other directions. A Parisian gunmaker of whom I asked the question informed me that it was never done upon the premises of the manufacturer; that the artists generally resided in Paris; and I inferred from his manner that they were of professional standing and reputation.

The gun I have mentioned as having been made for the Emperor had inscribed inside the case not only the maker's name, but also those of the artist and principal workmen employed upon it,—an example I should like to see followed in England.

The use of damascened work is also a speciality of the French *armes de luxe*. Nothing can exceed the clearness of the work or the elegance of the designs. The breech part of the barrel and the top rib are the parts usually so treated, and the effect is rich in the extreme, especially when the design is raised above the surface, and the ground—as it is sometimes—frosted steel or silver. The engraving upon the damascened ornaments is also very delicate and beautiful. Chasing of the most elaborate character is very freely used, and, indeed, nothing appears to be left out that would assist in making these arms what they are avowedly intended to be—viz., articles of luxury.

It must be understood that these rich and costly productions are not meant for use, but for the cabinet of the nobleman, or for purposes of exhibition. Nevertheless, in speaking of the general gunwork of that country, or in making a comparison of it with our own, it would be impossible to pass them over, or to avoid giving them a prominent place, not only because of their intrinsic value, but because the idea they express—that of making a gun a work of art—is carried out more or less throughout nearly the whole of the manufacture. The influence of their example is seen in all qualities, but the very lowest, of sporting guns, and the result is a greater variety of form and ornament than appears in our work, and generally speaking an aim, at least, towards grace and beauty. I notice, for instance, that the French maker avoids a straight line wherever it is possible; the border of the chequering is often curved or scalloped. In breech loaders the junction of the breech with the stock is a curved line. There is generally some artistic meaning in the shape of the hammer, and the percussioning is more elaborate than our own, the convolutions round the nipple being deeper, and more like a snail's shell. The hand of the gun is frequently carved in some

simple manner instead of being chequered, sometimes in imitation of the rind of a pine-apple. Gilding is often used on the prominence of the furniture, &c.: the maker's name is generally gilt upon the barrel. Chasing is used, or a mixture of chasing and engraving, the most tasty things I saw of this kind being chased in scroll work, with little spaces left here and there on which heads of animals, groups of birds, or dead game were very neatly engraved.

Other minor points of difference from our own work in external finish may be noticed, which do not partake of an artistic character. The stocks, for instance, of their best guns are generally varnished, and I thought they did not appear to set so much value as we do on beauty of figure in the wood. The heel-plates have all long straps; the strap of the breakoff is also long, and curved a little way up the thumb-hole of the stock. I think I may say with justice that in some few points of outside finish their work is inferior to ours. The points, shoulders, &c., are not so sharp and clear as in our best work; the lock-plates do not seem to lie so flat, and the scroll engraving is not so good. I thought, also, that in general shape, outline, &c., their guns were sometimes inferior to ours of the same quality.

The impression left upon my mind from a careful study of the external forms of the French work was this—that they beat us in their speciality, and we beat them in ours. I saw the hopelessness of any attempt to cope with them upon their own ground; their art work, as applied to their highest class of guns, is far beyond anything we could do, with the present resources of our trade; and I do not think our makers would see the necessity for it if we could. When we come to the lower and more marketable qualities, the effect of their style of ornament is somewhat meretricious, and I, for one, prefer the English character. One lesson, perhaps, we might learn—not to adhere too closely to stereotyped forms in those parts which most readily admit of variation, such as the shape of the furniture, the hammer, &c., or the style of engraving. In these matters with us the mode which custom or fashion has fixed for the time is never departed from, and the effect is a sameness which strikes the eye painfully in an Exhibition like this. Surely some room for the play of fancy might here be safely allowed.

We have next to notice construction, quality of material, and general workmanship. All the best guns, and a great majority of the others, are breech-loaders, on Lefauchaux's original pattern, with the improvement of the double grip. The lever turns, not, as with us, over the guard, but down the fore-end, which is entirely of iron, and the lever fits neatly upon it. When the lever is pushed aside, and the breech is open, a smaller lever underneath releases the barrel from the stock. They look neat, and the work appeared sound and good; the parts fit well, and the grip has a firm hold. Nearly all are back-action pattern; very few bar guns. Some few snap actions are shown; one by Koblin has the snap lever at the nose-cap, and a wooden joint, but the run is upon the double grip. Two makers—Marquis and Schneider—show guns more English in appearance than any others, having wood fore-ends, and the lever working over the guard, but nearly all the others follow the French style. Comparatively few guns, and those only the best, are made for

central-fire cartridges—the majority are for pin cartridges. I did not handle any that were fitted with extractors similar to our own; the only extractors I examined were not self-acting ones, but worked with a lever fitted in the top rib. One or two actions were shown me made to open by sliding forward, and one in which the barrel turned on a pivot, but these being the only instances, I think they were looked upon more as novelties than anything else. Upon the whole, I think that in breech-loading actions, whether for quality or variety of principle, the English trade stands in advance of the French.

The barrels of their best guns are first rate—indeed, I believe as good as they can possibly be. I had an opportunity, which I shall presently describe, of witnessing the method of manufacture at one of the leading barrel-makers, and the impression formed in the Exhibition was there confirmed. Nothing can exceed the clearness and brilliancy of the bore, the truth of the workmanship, or the lightness and general beauty of the whole. Many of the guns are made lighter than ours—I mean shorter, and of smaller calibre; but best barrels of equal calibre are made as light as any I have seen in England. The markings of the twist show great variety, and of course indicate as many systems of manufacture. They show generally a most brilliant brown, the surface having been struck up to a high polish. The common barrels are heavy, clumsy, and a great contrast to the others, but the best barrels, I think, cannot be excelled.

The locks are not so good; they speak well, but they pull unequally, and come up at last with a jerk. The first bent is short, only just clearing the nipple, there being a long interval between the first and second bent. There is a vast difference between those I tried and our best English make; nothing like the sweet, oily action of our best Brazier locks. I examined one pair of back-action locks in the soft state, price 30 francs. I thought them inferior to our 15s. quality; the inside work was not smoothed up or freed as it should be, the springs were thick and clumsy, and the mainspring appeared to have very little set. The scar nose was not filed up, and the bents were not in, so that work, I suppose, is left for the finisher to do. There were not, either, that harmony and due proportion of parts which strike the eye in a thoroughly good lock.

In furniture filing, and other matters of workmanship which can be judged of by handling the finished gun, I saw nothing to call for further remark. Of course it is impossible to pronounce decidedly on the merits of any piece of work without taking it to pieces, and this was out of the question.

We now come to the all-important matter of price, and many of the readers of this report will probably be as surprised and gratified as I was to find that the French prices, on an average, run much higher than our own. Only a part of the guns are ticketed, but those are precisely the sorts about which we most desire information—viz., the moderate qualities for home use, and down to the very cheapest for exportation. Of these kinds, the prices for breech-loaders range from 130 to 550 francs; that at 130 is a very plain gun indeed, scarcely any engraving or ornament, and the stock not even chequered; still, it appeared a sound and useful piece. Those at from 400 francs were lower in quality than could be

made for the same money in England. From the closest inspection I was able to make, I should judge that the guns marked from 200 to 300 francs were of corresponding quality to our ordinary back-action double breech-loader, the selling price of which is 6*l.* or 7*l.* A breech-loading action in the soft state was marked 130 francs.

There is certainly a gun exhibited, a breech-loader, which is lower in price than anything we have. The price is ninety francs ; but it reaches a depth of commonness that we have never touched yet, and I hope we never shall. As a bystander remarked, it was "awfully common." A pair of heavy, plain, iron barrels, blacked over, locks of the most worthless description, common cast furniture, and not an atom of threading or chequering about it. A muzzle loader of the same quality was priced thirty francs. I am bound to say that the work was, in some respects, fair ; the locks, furniture, &c., were let in close, but the polishing was very rough. There are some guns a little better than the above, single and double, such as used to be made for the American market, with plain iron barrels, but the prices are always higher than ours for the corresponding quality. They are chiefly remarkable for the ingenuity with which the intricate figures of the French twists are imitated. Some of them, to an unpractised eye, would probably look better than the real thing.

The very best qualities, and the *armes de luxe*, are not priced, nor could I ascertain their value. There were two exceptions, an ornamental gun by Javelle and Guichard, marked 2,500 francs, and one by Gaymu, a model and fac-simile, in part, of a gun made for an Indian Prince, the cost of which was 150,000 francs. A part only of the work is finished, to show the character of the design, and the precious stones which adorn the stock of the original are represented by glass beads in the model. The jewels, I have no doubt, made up in a great degree the enormous cost.

Some few novelties call for notice in this department. One or two makers endeavour to provide for the exigency of a sportsman using a breech-loader, where cartridges are not procurable, by contrivances which enable him to convert his breech-loader into a muzzle-loader at will. One does this by means of a second pair of barrels ; but the neatest and simplest arrangement is one by Marquis.

As far as I could see, a steel plug, with a nipple in it, is pushed into the breech exactly as a cartridge would be, the nipple filling up the hole for the pin. When the breech is closed, the transformation is complete. As I did not handle the gun, I cannot tell what provision is made against the escape of gas. The system is patented in England.

Rube has a compact little arrangement for extracting pin-cartridges. A semicircular plate, the size of half a penny piece, is laid on, and let into the top of the barrels at the breech ; its straight edge is flush with the end of the barrels, and it has holes to receive the cartridge-pins. This is pivoted so as to turn easily by means of a small lever-handle growing out of it on one side, and when the cases have to be extracted, a quarter of a turn, first one way, then the other, forces them out. This is also a patent.

Saine shows a breech-loader with three barrels, one lying along the

top, and between the other two. The two side locks are the same as in an ordinary gun, but a central lock fires off the third barrel. The puzzle is that there are but two triggers. One of these must do double duty, but how I could not discover.

Harmant has a plan of rifling the barrels of shot-guns, and shows two barrels cut open lengthwise to exemplify his system. The grooves, or flutings rather, are very narrow, close together, and run straight with the bore. I suppose the object is to facilitate the passage of the wad. The barrel, left plain to show the contrast, has a rough interior that could only belong to the commonest description of firearm.

There are a few of those ornamental, diminutive articles, known as ladies' or boys' guns and pistols, and which partake more of the nature of toys than firearms, with the barrels made of aluminium bronze. This material has a rich appearance, and suits this class of goods well. Whether it is capable of more extended application is doubtful. Albert Bernard exhibits a pair of barrels made of it, the full ordinary size.

Of military arms there is a scanty display, the place of honour being occupied, as a matter of course, by the Chassepot rifle. It is totally unnecessary for me to describe this arm, now so well known in the trade, but so much is made of it by the French that silence on the subject would be out of place. Its effectiveness as a shooting weapon has been abundantly proved and acknowledged, and there does not appear anything very reliable in the vague rumours that have circulated to its prejudice of late. I have heard military men speak of it as a good gun, and also workmen engaged upon it here. It seems to be a modification of the Prussian needle-gun (said to be the worst breech-loader extant), though no doubt the known defects of that gun have been avoided. One feature common to both is the absence of a lock, the discharge being effected by a sliding bolt in the back part of the breech action, which is shot forward by a spiral spring. This spring is said to be the weak point of the Chassepot. If, however, it has a tendency to become weaker after much using, as is supposed to be the case, it would still be easily replaced. A stronger objection seems to me to lie in the great force required to push the bolt back into full cock; this has to be done by the direct pressure of the hand or thumb of the soldier upon the whole force and power of the spring. In pulling up an ordinary lock, a powerful leverage is obtained in the hammer, which makes the action easy and pleasant; this, on the contrary, is heavy and fatiguing, and must tell in the course of a long day's work.

The Snider gun I found, to my astonishment, is claimed as a French invention. The following is a copy of a notice affixed to one in the Exhibition:—

"Breech-loader adopted by the British army, under the name of the Snider gun. Invented by G. Schneider, armourer, 14, Rue St. Anne, Paris. See his French patent of Oct. 4, 1860, No. 46,957, and the *Standard*, of 18th and 25th December, 1866."

I was informed that this statement had been challenged, and that the representatives of Mr. Snider were taking some action in the matter, of what precise nature my informant did not know.

Stocking by machinery is also claimed as a French invention. Two

or three very rude specimens, of a long obsolete pattern, are exhibited, said to have been executed by machinery, the invention of the Chevalier Philippe de Girard, who constructed them for the Emperor of Russia in 1831. This statement also I had no means of verifying.

Before leaving the French Department I ought, in justice, to record my grateful acknowledgments of the extreme courtesy and patient attention I met with from the attendants, especially after they became aware of the nature of my errand. Every facility was afforded me to examine whatever I thought necessary, and no explanation was withheld. Some of the cases, and those among the most interesting, had no constant attendants; consequently I was obliged to content myself with viewing the articles through the glass; but wherever there was an official in charge, everything was laid open for my inspection, and all inquiries were freely answered.

VISIT TO THE BARREL MANUFACTORY OF M. LEOPOLD BERNARD.

This gentleman, whose barrels are held in the highest estimation by French gunmakers, as is evident from the number of them I saw bearing his name attached to the very best works in the Exhibition, has an establishment pleasantly situated on one of the outskirts of Paris. He makes none but the best, consequently his works are more compact than extensive; but as everything is done under one roof, from the making of the iron to the finishing of the barrel, it is very complete and interesting. I shall endeavour to describe as minutely as possible the various processes in use there, leaving to those who are more intimate than I am with the barrel manufacture the task of picking out what is new or worthy of imitation.

I was first shown the raw material as they receive it, in the shape of bundles of long rods three-eighths of an inch square, some of steel, others of the best iron; these are cut into pieces of about eight inches long to begin with. The next thing is to make a number of these short pieces into a faggot, which is done in the following manner:—Eight of them, iron and steel alternately, are laid down in a row, side by side; on the top of this another row, but the pieces arranged so that steel rests upon iron, and iron upon steel. Another row, still reversing the order of the metals, and so on up to eight, thus forming a square bundle, iron and steel alternating throughout. This is bound together with wire, and heated to a welding heat in the forge, then beaten together under a tilt hammer and upon the anvil till it becomes a square bar of about twenty inches long. It is again heated, and passed through rolls till it assumes the original form of a long square rod, being now an intimate mixture of iron and steel. Again it is cut into lengths, this time about two feet long. The workman takes one of these pieces, and having heated it to a worm red, places one end in a vice, and the other in the nozzle of his brace, and twists it regularly and evenly from end to end. The twisting is not so excessive as to strain the fibre, only about three turns to the inch, or thereabouts. Three such twisted lengths are then placed side by side so that the turns of the twist lie in opposite directions to each other, and are again bound together, heated to a welding heat, and hammered and rolled into a long strip about seven-eighths of an inch

broad ; this is the ribbon from which the barrel is made. When it has reached this stage, it is amazingly tough, and may be bent backwards and forwards any number of times without producing the least sign of a fracture. M. Bernard contends that this metal is stronger and better than that made from horse-nail stubbs (so long held to be the very best material for gun barrels), inasmuch as the fibre is maintained longitudinally throughout the process. Added to this, the difficulty of procuring old horse nails, and the introduction into the market of many worthless imitations, have caused that method of manufacture to decline. The ribbon being again moderately heated, is wound round the mandril by a smith, who does it carefully and slowly with his hammer upon the anvil ; and I noticed that he seemed very careful to have the metal of even temperature at the part he was striking. I have seen this operation performed in England in a different manner, the ribbon being wound upon the mandril cold by means of a windlass. M. Bernard's way takes longer time, but I should imagine there was less risk of straining the fibre. The welding of the barrel follows, a process requiring great care and skill, doubtless, but involving nothing new. When thoroughly welded and cooled, it is roughly scraped or rasped over to see that the joinings are complete, and taken to the boring bench to be bored. The bench and tools are precisely the same pattern as we use, the barrel is pushed up towards the bit by levers, and bits of gradually increasing size bring up the bore to its proper gauge. The fine-boring I did not see done. When finished inside, the barrel is a true cylinder for two-thirds of its length, the remaining third, towards the muzzle, opening slightly out, so that the calibre is greater there than in the middle. Colonel Hawker, in his old work upon gunnery, advocates this, I remember, as the best form of bore for shot. When the boring is finished, and the barrel ascertained to be true and clear inside, the next step is to remove the superfluous metal from the exterior ; and it is at this stage that the methods in use at M. Bernard's factory possess the greatest novelty. Extraordinary care is taken not to cause any deflection of the barrel by unequal pressure upon it in any part, and so successfully is this accomplished, that no regulating is required at any subsequent stage. In the first place, the barrel is placed in a turning-lathe, and the two ends are turned true for about an inch and a-half, no more. The lathe is a large one, and of the same construction as our barrel turning-lathes, but no further use is made of it than this. The barrel so turned is placed in a planing-machine on a mandril which fits it exactly, and the surface is planed very gradually and carefully down. The mandril is fixed rigidly in the frame of the machine, and the barrel turns smoothly upon it, making a fraction of a revolution each time after the cutting-tool has passed along. The cutting-tool moves along the machine, and is guided in its course by a horizontal bar placed parallel to its motion, which has upon its under edge a curve corresponding to the outer shape of the barrel ; rollers attached to a bent arm extending from the holder of the cutting-tool traverse this bar, and force the cutting-tool downward where the hollow of the barrel has to be formed ; the tool, or rather the holder containing it, recovers its position by means of a spiral spring, pressing upwards. All the motions of the machine are self-acting, and all the

workman has to do, after placing the barrel in, is to watch and set the tool. He first sets it so as just to catch any excrescences or knobs upon the barrel, and afterwards, little by little, and very gradually, lowers it until it takes a fine regular shaving off from end to end all round, by which time the tube is approaching its final size. I was at some pains to ascertain from M. Bernard what advantage he derived from planing his barrels instead of turning them in a lathe; and he told me that by this method he obtained greater truth. The barrel turning round upon a fixed mandril, aided this result; it was more rigid, and less liable to give than if turning mandril and barrel together in a lathe, where the only resistance to the pressure of the cutting-tool is offered by the two points or centres on which it turns. He contended that the pressure of the tool, however light, especially at first, while the surface was rough and uneven, would be liable to cause a slight displacement of those centres, and if once any deviation took place, all hope of ultimate truth in that barrel was gone. He also claimed an advantage in the planing-machine, from the fact of the cutting-tool passing from end to end of the barrel, instead of pressing, as in the lathe, only at the point where it was for the moment at work. Whether these reasons are well or ill founded, I leave others to judge; certainly the results attained by M. Bernard bear out at least a part of his theory. Whether the turning system be imperfect or no, at least the planing system seems to ensure success. A barrel was shown me, cut off across at the middle, to show the even thickness of the metal round the bore, and the most critical examination failed to detect the slightest shade of difference. I need not remark to a practical mechanic, or even a practical sportsman, of what immense importance this is in the make of a barrel, both for safety and for precision of fire. The slightest inequality in the thickness will cause a deflection in time, and the unequal resistance offered to the great force of the explosion of the confined powder will infallibly cause the weakest parts to go first.

When the tube leaves the planing-machine it is nearly finished, the surface requires little more than rubbing down with emery; the next process is the joining of the tubes together to form a double-barrel. Being first flattened at the point of contact at the breech, they are laid together, and bound firmly every two or three inches with binding-wire; but first, as the tubes are smaller about the middle than anywhere, and of necessity only touch at the two ends, the interstice has to be filled up with small pieces of iron, to prevent the wire-binding from pulling them in. When this is done, and the workman has got the barrels to range properly by placing straight-edges across them at different points, he proceeds to lay the ribs, and fixes them firmly in their proper places by minute wedges, driven in under the wire, ready for brazing.

M. Bernard brazes his ribs in preference to soft-soldering them, and this he does in a peculiar manner. A thin brass wire is laid down each side of the rib, without borax or other preparation, and the barrels being plugged up at both ends, are plastered thickly over with a mixture of yellow earth and horse-dung, moistened to a proper consistency, and kneaded with the hands. When coated two inches thick with this, and dried, they are placed in a stove, and heated sufficiently to make the brass run; and I was told, that when they come out and are cooled, the

dried earth crumbles easily away, and leaves them as clean and bright inside and outside as when they were first put in, with the rib securely and thoroughly brazed down. If it be true, as it doubtless is, that a good barrel well made cannot be afterwards partially heated without damage, this must be a preferable mode of attaching the rib, than one which necessitates the blowing it hot over a forge-fire, or the insertion of red-hot irons up the bore. The striking up follows, and here again great caution is used not to bend the barrels by bearing on them with the tools. A stout piece of steel the length of the barrel, rounded and polished underneath, with proper bearings at each end, receives them, the round steel looking like a third barrel under the other two. One end is placed in a vice, the other rests upon a horse or rest fastened in the bench. The workman takes his striking-tool, which is a heavy oblong block of steel cut like a smooth upon its four sides, and fixes it crosswise in a block of wood which is shaped into handles at its two extremities; laying this on his work, he takes a similar block of wood, having a semicircular part cut out across the middle where the striking-tool is fixed in the other, and places it underneath, the half-circle fitting on the steel rod. He then grasps these two blocks together by their handles, and takes long strokes from end to end, the under block sliding along the steel rod. It is evident that any pressure upon the top part of the barrel is compensated by that underneath, as long as the workman avoids bearing down upon his work, and only exerts force by clasping his hands tightly; there is, however, little necessity for force, for both barrels and ribs are nearly in a finished state before being put together, and only the last touches require to be made.

I did not see any breeching done, but some finished barrels were shown me, and the work was most excellent; indeed, speaking generally, I do not think it possible for better work to be turned out than I saw in this establishment.

I saw there a float of peculiar construction, which appeared to possess extraordinary cutting powers; it was used for shaping the rib. Instead of being notched like the teeth of a saw, a number of slots, a quarter of an inch deep, were cut in a slanting direction along the face; the edges of the intermediate pieces being filed up sharp, take good shavings off the iron when used only by the hand.

It would be unpardonable to omit mention of the perfect kindness and courtesy of M. Bernard, who, in company with his foreman, himself conducted me over the works. It happened that the foreman had been commissioned in the same capacity as I was, to the English Exhibition of 1862, and this fact made us brothers at once, but the proprietor himself, with the clear directness of a man of business, and the politeness of a French gentleman, gave me every needful explanation, and answered every inquiry without reserve.

The prices of M. Bernaud's barrels range from 140 to 180 francs per pair, and the workmen earn from 8 to 11 francs a day. I was charmed with the perfect good understanding that seemed to prevail between master and men. The workshop (for there was but one, all the processes being carried on within four walls) was airy, lofty, and pleasant, having an outlook upon a garden or shrubbery full of green trees. Altogether,

my visit to this establishment will form the subject of many a pleasant memory for years to come.

VISIT TO THE ESTABLISHMENT OF M. LE PAGE-MOULLE.

This is simply a Parisian gun shop, of considerable reputation, doing little upon the premises, and the only thing I saw there worth notice was a rifle of peculiar construction invented by the proprietor. It fired four shots, while it had but two barrels, and only one trigger. The barrels were not placed abreast, but under and over, and each had a vent hole, one a little way ahead of the other. The first charge fills up the space to the foremost vent hole, and the second charge, from the top of it, the bullet between preventing communication between the two. When both barrels are charged, and the four hammers at the succession of pulls at the trigger fires them off one after the other. The locks are let into the sides of the stock in the ordinary way, having two sets of works on each lock plate, one behind the other; and the way in which one trigger lets them all off is this:—When the front right-hand trigger is pulled off, a projection on the falling tumbler presses against the sear of the trigger, and shifts it under the sear of the left-hand lock, which, when pulled off, in turn shifts it back again. The trigger being pulled off a little further than before, having done its work with regard to the front locks, gives motion to a compound lever behind it on the trigger plate, and this acting as a second trigger, pulls off the two hinder locks in like manner. It is more curious than useful, and I should think of doubtful safety.

I was also provided with an order to view the works of M. Lefebvre and Co., extensive manufacturers of guns and pistols, but here, where I anticipated the most instructive and interesting lessons of all, I experienced the huge disappointment of finding the place closed, and not a man at work. A death in the firm had thrown the concern into liquidation, and it was being prepared for sale, and as no other manufactory of the same extent existed in Paris, the only opportunity I had of the kind was lost.

BELGIUM.

The Belgian display is very neatly and compactly arranged in a square compartment which allows of ready inspection and comparison being made. It is of much smaller extent than the French, but larger than that of any other nation beside, while it is more complete than any, having specimens of all kinds of guns, from *armes de luxe* to African muskets. I could not help being struck with the way in which they had laid themselves out, as it were, to catch customers, like an enterprising tradesman, who sets out his wares to the best advantage; while the English are like the old-fashioned long-established shopkeeper whose goods are known to be reliable, whose customers cling to him because they know they cannot do better elsewhere, who never advertises, does not push himself forward, and does not do half the business of the other. I should have liked to see our productions placed side by side with those of our great rival, feeling certain that we should not

suffer by the comparison, in any one particular. The arrangements of the Exhibition would not, of course, permit this, but we might have been at least on a level by placing our wares where they ought to be, and setting them out with equal taste and judgment. The several displays are examined by connoisseurs, and, what is of more consequence, by buyers from all parts of the world; for the great show city of Paris attracts many more than London would, and first impressions, as we all know, are lasting, and, if false, difficult to remove. I have no fear of Belgian or any other competition in my own trade, in the long run; indeed, I came away from the Exhibition with renewed confidence and much better hope than I had before; but I could not help feeling vexed to see ourselves outshone before the world. I know that there were many obstacles thrown in the way of English exhibitors, and I know also that there is a growing disinclination among our manufacturers to take part in these international displays; but being there, it was obviously desirable to look as well as we could. In the arts of trade, as well as in our armaments, we must be abreast of other nations, if we are to be safe, or maintain our status; and though we may not like the trouble of the one, or the expense of the other, we must perforce conform to what, it may be, is very much against our inclination. A little combined action among our leading gun-makers would have made the English display what it ought to be, viz., for all useful purposes, the finest in the world.

We must, in courtesy, notice the best work first. As before hinted, there are some few *armes de luxe*, but, as a rule, woefully behind the French in taste and execution, except where evidently copied from their models. The general style of their best work is French, and, indeed, I saw no originality worth noticing in all their sporting guns. They appear to be great copyists; I saw scarcely anything in the French department but what was reproduced here, and at a lower price, except, indeed, those specimens of high art in which the French leave all other competitors far behind. In shape, style of ornament, principles of construction, and even in their defects, the Belgian work is, so to speak, a photograph of the French. The barrels, as in the French, are the best feature; they are well made, clear, and the twistings show infinite variety. The Damascus patterns are even more varied and minute than in France, and produced at astonishingly low prices for what they are—or rather what they appear to be—for I have heard tales about the Belgians veneering their barrels with Damascus iron. The locks have the same defect as the French, but as they place the first bent where we do, nearly up at cock, the uneven pull is more apparent. In other respects, any description of the Belgian sporting arms would be a repetition of what has been said about the French.

The prices are relatively much lower; the common breech-loader I saw in the French department at 90 francs is here marked 56; but, if possible, a lower deep of inferiority is reached in its construction. The muzzle-loader corresponding to it, a double gun, is 14½ francs! I could not have conceived anything so common—it was, without exception, the worst gun I ever handled in my life. A single gun, same quality, was 6 francs. But these cannot properly be called guns; like the razors in the story, they are made only to sell.

When we get among guns that may be reasonably supposed to be good for something, there is nothing to be alarmed at in their prices as compared with ours. A gun equal to our common 25s. double would be £1 6s. 8d.; our £5 breech loader would be 135 francs, and so on in about the same proportion. The very best guns, as in the French cases, were not marked.

In military work they have a strong display, and the curious in such matters may here see specimens of almost every known breech-loader, from the Prussian needle-gun to the Chassepot and the Albini. There appeared to be nothing absolutely new; indeed, anybody with a turn for mechanics could not fail to be struck with the great similarity of principle involved in each.

There seem to be two leading ideas in military breech-loaders, and most of the so-called inventions are more or less modifications of them. One idea is the opening of the breech by the pulling back of a bolt, which, when the charge is inserted, is pushed home and turned down, precisely in the same manner as the unbolting and bolting of a door. The Prussian gun and the Chassepot, and several others, belong to this class. The other idea is the lifting a solid block out of the breech, pushing the charge into the barrel in front of it, and putting it back again. To this class belongs the Snider. The various ways of hinging this block, and securing it when down, form half the varieties of breech-loaders. In one the block turns over to the right, in another to the left; in one backwards, in another forwards; all differing in some minor, though perhaps essential, details, but the main idea is the same, and the original of it I believe to be the Armstrong gun. They are all, no doubt, safe and efficient weapons, and the superiority of one over another consists generally in the simplifying of the parts, or reducing the number of motions necessary to open the breech—a very necessary point. The attendant in charge showed them very willingly, and pointed out the salient points of each. One gun seemed to be his especial favourite; the breech block when open formed the sight, at the pulling of the trigger it fell back into its place. There was nothing to call for remark about the workmanship of these guns; it seemed to be, on the whole, good.

I could obtain no reliable information about the prices of military guns. An Enfield rifle he said was £4, but for a large quantity the price would be less. I saw a long Enfield barrel, with no tail pin, "Marshall's" iron, marked 7 francs.

For African guns the prices were: black beech stock, with bayonet, a little over 9½ francs; without bayonet, 8½ francs; Buccaneer, 11 francs; Fuzee, 7½ francs. The work, patterns, &c., exactly resembled the English.

I saw there a novelty in the shape of a cavalry sword, with a revolver in the hilt, the trigger within easy reach of the finger. A sergeant of artillery (a most intelligent man), who was with me, spoke of it as most valuable. In situations where the soldier was engaged at such close quarters with the enemy that he could not use his sword, he could make a lane with his revolver.

They have a great variety of revolvers, and in this line they really

display much inventive genius. They are continually bringing out fresh patterns, many of them of great ingenuity and beauty, and all very cheap. I saw none in the Exhibition that were not already well known in the trade; so it would be useless to attempt the very arduous task of describing them, as I could not possibly make the description intelligible to any one out of it. It happens that I have had other opportunities of becoming acquainted with Belgian revolvers, and I know their merits and defects well. They are, as I have said, well and cleanly made, and very ingenious; the parts fit with great nicety, and the patterns are generally handsome and appropriate, but I am afraid they are deficient in *lasting* qualities. The Belgians have a very soft and easily-workable malleable iron, which they know how to cast to perfection, and they make a very liberal use of it indeed in the manufacture of their revolvers. The bodies, the barrels, and sometimes even the chambers, are made of it, and every workman knows how much easier it is to file up a clean casting in soft iron than a lump of wrought iron, however shapely it may be forged. This is a very important item in the cost. Soft, and even tender as the iron may be, the pistols are made very light, but the metal is evenly distributed. Still it would not stand the ordinary working strain of a nipple or muzzle-loading revolver, and the proof such undergo in England would be likely to shatter some Belgian pistols to pieces. Knowing this, they make none but cartridge or breech loading pistols, on which the strain is very much lighter. I have been assured that even the hammers and triggers are sometimes made of cast iron. I know they are often soft, and the bents easily wear away. The springs, too, are soft, and soon relax in power, and from their make, have not much strength, but sufficient to strike off a pin cartridge; and for pin cartridges the Belgian revolvers are invariably made. To sum up, though, as a rule, they are cheaper at the outset than English revolvers, they will not last so long, and are most expensive shooting.

OTHER CONTINENTAL STATES.

Though the contributions of Austria, Prussia, Holland, &c., prove abundantly that those countries know how to make guns, and make them well, there is nothing in them from which we can learn, nor are they likely to compete with us in the market. The general style of sporting work is French, of military, the well-known Continental pattern. The Prussian best guns are very chastely decorated, but are heavy, and have great cheek pieces on the butts. Those of Austria are lighter, and for finish, perhaps a little before the Prussian. Prices range about the same as the French, if anything, a little lower.

UNITED STATES.

After leaving the French department, and travelling through those of more or less successful imitators, we come upon the American section, and here at last we find individuality of character. Their display is not at all extensive, it consists principally of single specimens of military breech-loaders, and small collections of revolvers; and like most American productions, they are rough, plain, and good. Our cousins aim not so much at pleasing the eye as in making a thing answer its

purpose, and in this particular they generally go straight to the mark. The rough and ready way in which they cast aside old theories, the boldness with which they start out on new and untrodden paths, the entire confidence they have in themselves, and their sagacity in finding out what is to be done, and doing it—all find expression in their work. They have not the patience to dwell painfully on the little details that go to make perfection, but they can *originate*; and many a good thing, rough hewn by them, and perfected by more delicate hands, is destined to live, and influence the future of the world. We are indebted to them, in the science of gunnery, for leading us in more than one path we now follow with profit and advantage, and we may yet have to thank them for pointing out the way we should go in the selection of our future service arm.

The Spencer repeating rifle, shown in this section, has enlisted the suffrages of many good judges, who say of it, that though not a perfect weapon, it yet indicates the direction in which progress should be made. If quickness of fire be a desideratum, and it is the only reason for the adoption of breech-loaders at all, that arm which best fulfils the condition, so long as it does so with safety, is the best, and repeating or magazine rifles may be made as superior to any ordinary breech-loader in this respect, as that is to the old Brown Bess.

The Spencer rifle carries a magazine of cartridges in the butt; they are pushed one by one into the breech by a simple mechanical arrangement as required; and seven shots can be fired in almost as many seconds. When the magazine is exhausted, it can be filled again in about the same time as it formerly took to charge a muzzle-loader. The gun can also be loaded in the same manner as an ordinary breech-loader, and as quick. The military correspondent of the *Standard* spoke of it very lately in these terms:—"But it has been argued that a repeating rifle involves the temporary inefficiency of the soldier while filling his magazine, a process which must necessarily take longer than the simple loading of a single breech-loader. This difficulty is therefore overcome in the three rifles I have named (Spencer's, Lampson's, and Ball's), by their being so arranged as to be capable of being used as single breech-loaders at will. Thus a man under ordinary circumstances will use the arm like any other breech-loader, but, at the necessary moment, to repel an attack, for instance, the magazine is brought into play, and the deadly fire is vomited forth with awful rapidity."

Colt's revolvers deserve their high reputation for being strong, serviceable weapons, but they have not what an English workman would call finish; they have what is needed, nothing more. Smith and Wesson's are of a smaller and more delicate construction, and, as pocket pistols, they too have a high reputation all over the world.

In conclusion, I, for one, see little that is really disheartening, or cause for alarm, in the products of the competing nations; nor do I think that England need fear being beaten, unless when her rivals start with a *natural* advantage. The super-eminence of the French in art work, in which they beat us most, is generally attributed to their education and training, matters in which we could imitate and come up to them if we chose; but I think they have a natural aptitude which we have not, and

this gives them a start in the race. To say that we are in danger of being hopelessly beaten when we start on *equal* conditions is to say that we are deficient in natural parts, which I do not believe. Much is made of the fact, that the continental workman can live cheaper, and consequently work cheaper than we can; I don't think there is much in it. If it costs us more to live, we can do more work in the time; the same climate which permits a lower form of diet, enervates, and diminishes the physical strength. If we are occasionally cut out by rivals when they have no natural advantage in their favour, it must be from some removable cause, which we should at once endeavour to find out. Some readier ways of working, some labour-saving expedients, they may have, which we are not cognizant of, and which perhaps few but a workman could recognize if he saw. In those few instances where the Belgians can produce cheaper than we can, I doubt not something of this kind exists, and could I have visited the factories of Liege, I could perhaps have thrown some light on this part of the subject. In only two points are we beaten; by France in costly beauty—by Belgium in cheap coarseness. In the one case, we would gracefully concede the palm—in the other, we had better decline entering ourselves in the race after “the cheap and nasty.”

ON PAPIER MACHÉ.

By DAVID SARJEANT,

JAPANNER, BIRMINGHAM.

I HAVE the honour to present this Report, the result of my visit to the Paris Exhibition, wherein I found contributions from France, England, Russia, Prussia, Spain, Holland, Italy, Turkey, Austria, Belgium, Wurtemberg, Japan, China, India, Siam, Algeria, and Persia.

JAPAN

I mention first, as being the country which first perfected the art of covering various substances with varnish, in order to preserve and beautify them, an art so useful that it is practised with variable success in most lands.

The Japanese still maintain an honourable position, as is proved by the value of their productions, twenty pounds being asked for a small tray.

The number of articles exhibited is large, comprising trays, boxes, cups, vases, screens, cabinets, and other useful articles, made chiefly of wood. Some are of ivory, tortoiseshell, and copper; others of a very ornamental form appear to be formed of lac, modelled or pressed into relief. Black is chiefly used for grounds, but red and other colours are used. The surface is invariably good, being level, smooth, and firm. The decoration usually consists of natural objects, as flowers, birds, flies, etc., in gold powder and bronze, and they are embossed by some unknown process. The feathers of birds, and veins of leaves, which are faithfully modelled, are sometimes burnished.

The Japanese appear to have no knowledge of conventional design; but they carefully avoid over crowding.

Having had occasion to repair Japanese work, I observed its peculiar toughness, and took this opportunity to inquire if any of the persons connected with the Commission could tell how it was done. M. O. Chevalon stated that no one has had better opportunities of knowing than he, having been on a Commission to Japan, part of his duty on that occasion being to inquire into this subject, "but the natives," he added, "are so jealous that I could gather nothing from them. I suppose you know," he continued, "that others are desirous to obtain this same information. I could have a thousand pounds from one party alone if I knew it, and the possession of this secret would be a fortune to me."

The workmen of a manufactory I visited are as much in the dark as ourselves, for although the varnish used is to be had, no one knows how to apply it. One said he thought the raised parts were produced in the same way that impressions are taken with wax, another thinks it is modelled while soft. Most of it is evidently done with the pencil, but we have no material that could be used in this manner. A bottle of the varnish is exhibited; it resembles tur varnish, but owing to some chemical change is become quite opaque, and of the colour of rottenstone. Those articles which are formed of ivory and tortoiseshell, and also copper, have flowers worked upon them in lac, which seems to attach itself firmly, and has somewhat the appearance of cameos. I have noticed that the black ground is liable to become opaque when water is applied to it, but this disappears with drying. If tortoiseshell could be reduced to varnish, or glue, so as to recover its original toughness by drying, I think the result would be very similar.

I may add that, although a large number of articles are exhibited, there are none of them equal in beauty and delicacy to a specimen I met with in London, the property of a private gentleman.

The Japanese insert small metal discs.

CHINA.

I mention China next to Japan in order to bring out some characteristics by which the productions of these countries may be distinguished from each other.

I have said the Japanese do not overcrowd with work. The Chinese fill theirs to the uttermost. The former do not bring out the shape of the article with lines or borders. The latter are in advance, so far as this, that they know the use of lines and conventional borders, made by repetition of pretty forms, as keys, &c. The Japanese seldom introduce human figures or monsters. The Chinese use men, beasts, monsters, buildings, boats, trees, birds, and flowers. The Chinese have a method of embossing, but it is only a feeble imitation of their neighbours. They do not seem to use the same material, nor do they possess the same skill in manipulation. They seem to wish to make up for what is lacking in quality, by increasing the quantity, so covering the surface that there is hardly any ground to be seen. One might be disposed to admire the patience required to produce such work, but for a suspicion that it is printed.

Their mode of producing a surface is worth notice. According to a Frenchman, who stated that he had seen them at work, they take a bundle of hemp, and dipping it into the varnish, commence smearing it over the surface, replenishing the rubber as it dries, and repeating the process until the surface is produced. Those who understand French polishing will perceive this to be a similar process.

They chiefly use gold powder, which is not secured by any covering, so that it is easily rubbed off.

The fabric is generally wood, which is covered with canvas, upon which is spread a sort of cement, probably composed of lac varnish and fine wood dust.

Warping is guarded against by cross joining and panelling. Of course this is concealed underneath the finishing. Chinese work is not much esteemed, and is sold at low prices.

Their facility of pencilling is great, but their idea of modelling is very inferior, so that their embossed figures require to be etched with black to bring out the features and other details.

I was surprised at not finding any of those beautiful inlaid pearl works which have found their way to England, and I am afraid that exhibitors have not done their best on this occasion. There is certainly nothing from either China or Japan equal to work I have met with elsewhere, the product of these countries.

PERSIA.

The Persian lac presents quite a different style, and is very suggestive. The Persians possess great facility in adapting forms to the requirements of design, also a good perception of the harmony of colour, blending and commingling the richest and brightest colours in the most agreeable manner. They exhibit one case only, with not many articles in it: these are book-covers and boxes, for various purposes.

Some patterns are of curvilinear designs, formed by twisting and interlacing sprigs of flowers; sometimes springing from a centre, bound in with a succession of fillets, or bands, of different colours, which again form the ground for minute patterns and running flowers, sometimes conventional. The stems and outlines are gold, the flowers and leaves being filled in with natural colours, the ground also being filled in with colours to bring out the pattern. Some of the colours are transparent, and are laid on gold; spangles are also used to increase the richness and brilliancy, but although the most extravagant colours are employed there is no tendency to gaudiness.

One pattern may be described as an example:—In the middle is a straw-coloured panel, with ornamental centre traced upon it in gold wire; the pattern is composed of conventional flowers and leaves, of a dark colour, purple and green predominating; these have a very agreeable effect in contrast with the straw colour of the ground, which is enclosed in a black band, having small red flowers upon it; to this succeeds a border of curious and intricate gold and colour, followed by a coral-coloured line, intersected with gold; gold discs of various forms are inserted, according to the pattern. Other examples have the decoration disposed in parallel bands, drawn across the article. These are not so minute, and have sprigs of flowers running between or upon the bands; some rose branches run across without bands. The flowers in this instance are embossed after the manner of the Japanese, with beautifully painted natural colours. There is very little attempt at light and shade.

The fabric seems to be a sort of mill-board, but as the articles are in a glass case I cannot speak with certainty on this point. The articles are generally of a simple form. The making is imperfect, the edges lack squareness and regularity, the surface is also uneven; the whole is covered with transparent varnish, but not polished; the varnish is not of a good colour.

I met with a person who was sent from London by a celebrated de-

signer specially to sketch these articles. He complained that some had been sold, and, consequently, had been removed out of sight, to make room for the remaining stock. With regard to sketching, I found it contrary to regulations, and the police are very vigilant. I applied for permission to sketch, but being referred from one official to another, and then told to come again to-morrow, I gave it up.

INDIA.

India is poorly represented by two large coffers and a table of wood, shapes well known in England. The ground is black, covered with leaf gold work, disposed in lines of sprig borders and curious mapping; surface not good. One of these presents a novelty, consisting of small glass discs (silvered), which are inlaid in the same way that pearl is.

SIAM.

Siam sends a few vases, closely resembling Indian work. Vermilion is sometimes used for the ground.

Here are also articles apparently formed of steel, the surface of which is engraved, the ground cut away and filled in with lac; also articles of wood covered with some preparation of horn, into which are pressed small triangular pieces of variously-coloured glass, forming very pretty mosaics. This may be suggestive.

TURKEY.

Turkey is represented by two small coffers made of wood. Their shape is plain; colour of ground pale lilac, with tablets of pale green, with small roses painted on them. The shape is brought out with gold lines and ornaments, somewhat in the French style. A novelty is to be found here—namely, relieving the gold by indentation, which appears to be done by pressing metal punches of the required form upon the surface while warm.

ALGERIA.

Large furniture of wood, in the Moorish style. This style has been attempted on our work, but has failed for want of the carving, which, together with gold and colour, has a superbly-rich effect. The pattern may be saw-pierced out of thin wood, and glued on to the surface. The interlacing peculiar to this style is carefully observed by thinning down those parts that pass behind. The surface of the pattern is gilt, the perpendicular edges being white; the ground is blue or vermillion, according to the design. All the colours dry dead.

ENGLAND.

Before noticing the European productions I think it well to state that my observations are confined to such articles of papier mâché as are japanned, called by some *papier mâché* proper. Of this there are two kinds in use. One is said to be the invention of Mr. Clay, of Soho. It is made by pasting sheets of paper together, until sufficiently thick for the purpose; it is dried at a gentle heat, and afterwards saturated with linseed oil, then baked at a good heat. It is strong and durable,

and easily worked with cutting tools. The other kind is of more recent invention, and instead of being made by pasting sheet upon sheet, the fibre is made into panels of sufficient thickness. It is very inferior to the former, as it will not keep so good a surface. It is desirable to keep this in mind, because many substances which are called papier mâché in the catalogue are various mixtures of fibrous cement, intended mostly to imitate stone and wood carving. Of these I only know that some have proved failures, and have only served to bring reproach upon the name. Papier mâché proper is superior to wood for the purpose of japanning, as it does not warp when exposed to heat, and it may be formed into various shapes without joining, which considerably adds to its durability and strength. The cheaper articles are pressed into moulds.

England is represented by two exhibitors only—namely, Bettridge and Co., Birmingham; and Loveridge, of Wolverhampton. This fact, however, may not be matter for regret, since what is here is at least respectable, and although many good things are not here which are now selling in the best English markets, it is to be feared that a larger assortment might have also included some of those ugly things which have called forth just reprobation on former occasions. Mr. Bettridge exhibits a piano-forte and a variety of tables, chairs, trays, and fancy articles, of pasted paper, all well made and japanned. The chief novelty to be met with here is a white casket, inlaid with metal in the form of a border, relieved with pale green. This style is capable of development, although it has been neglected in England. The inlaying may be assisted by the electrotypes process patented, some twenty years ago, by Mr. Farmer. The bisque work, Persian lac, and enamelling of various countries may furnish suitable patterns for this kind of work; but there is no necessity for such voluntary humility as to call it imitation ivory. It is capable of standing on its own merits. The objectionable pencil varnishing should be avoided, by filling in the colours after the manner of enamelling, which would look better, and be more durable.

The gold work on the other articles is very good—(this remark will apply to the works of both exhibitors)—but the few flowers, landscapes, and figures exhibited only serve to show a sad decline in those branches, and compare unfavourably with continental work.

The sudden decline of the papier mâché trade in Birmingham is a fact which must have struck many observers. A brief notice of some of the causes that have operated to bring it into its present low condition may not be out of place: but first let me say that it does not appear to have been superseded by any materials possessing more desirable qualities.

The real cause of disaster is to be found in a period of unhealthy prosperity, which culminated some thirteen years back.

Prior to this time there had been a steady and improving trade, but now it began to attract undue public attention, and at length it became *fashionable* both here and abroad, and now the seeds of disaster were sown. The number of skilled workmen was insufficient to meet the increased demand, so that work had to be entrusted to inferior workmen and learners. It soon began to appear that buyers did not mind this, being unable to discern between the qualities of good and bad work; as for the Americans, they had a decided liking for the latter kind.

Manufacturers, finding it more profitable, turned their attention to and encouraged the production of gaudy and meretricious decoration, to the neglect of better and more carefully studied work. Trained workmen had the alternative, either to bow to a depraved and vulgar taste or leave the trade. Some took the former course, others found the latter more convenient, and succumbed.*

Worse yet, the public conceived a notion that the quantity of material was the test of value, and began to ask for more pearl and gold. This extra cost of material had to be met by a reduction of the workman's price, and further disregard for the quality of work, so that children came at last to be employed.

Then came a shock. The monetary panic in America suddenly deprived many of employment; these threw their productions into the home and other markets, reducing the price to gain a footing; employers seized the opportunity to cheapen labour, and, in their turn, were glad to sell cheaper to the shopkeepers, who suffered much loss from deterioration of stock, caused by fall in price. The public for a time eagerly bought up the rubbish hitherto made for America, thinking to secure bargains while prices were down.

Now, all this took place at the very time when Schools of Art were beginning to influence the public mind, and it became a favourite practice with art critics and lecturers to point to the papier mâché trade as a shocking example of the untaught condition of English art-workmen.

The public at length began to have their eyes open, and to see that the goods bought as such rare bargains were not "the thing," and, taking offence at the deception (which was self-imposed), have revenged themselves by joining in the abuse lavished upon their victims, and are pleased to call a false politician or dishonest tradesman a man of papier mâché.

Japanned, or (according to catalogue) enamelled slate, is contributed by Ferguson, of London. There should also have been here some from Magnus, of Pimlico. It is marked in the catalogue Class XIV., Group 3, but nowhere is it to be found in the Exhibition.

FRANCE.

France has several representatives. Having noticed one or two specialities in the Exhibition I shall proceed to notice a manufactory which was visited, for it would be impossible to form a correct idea of the trade as practised in Paris from viewing the few objects exhibited. One speciality is called *lac-sur-porcelaine*. It is some kind of earthenware, japanned, to imitate Japan lac. Another is treated in a novel manner; the articles, which are of wood, having been japanned, are ornamented by cutting pretty and graceful ornaments into the surface,

* Several of the men who turned their attention to picture painting have acquired some celebrity; some teach drawing, one is headmaster of an important public school, others are employed as lithographers. These facts should be sufficient to show that at this time, at least, japanners were free from the charges of inability and ignorance as working men. One firm in Birmingham tried to weather the storm by retaining a staff of good workmen, and by refusing to pander to bad taste. Unhappily, this establishment has succumbed, and is now no more. It is thought now that the worst is over and that better days have begun.

something like engraving ; these are afterwards relieved with various colours.

Having been provided with an interpreter and letter of introduction, I visited the new manufactory of M. Gallais, which is large and commodious, occupying three sides of a large yard. My companions were particularly pleased to see flower-beds ranged around a factory yard, and vines climbing up between the windows. Besides the workshops and stoves commonly belonging to our manufactories, one large shop, with stoves, adjoining, is set apart for white work, and another for gilding. This is done by females. Besides the two modes of gilding practised in Birmingham they have another, similar, if not identical, with picture-frame gilding. Females do the burnishing. Few small articles are made here ; furniture is what they give most attention to. The show room contains a large assortment of goods, in every style of decoration common in England, except bright gold, besides imitation of Japan lac and ebonized wood-work, decorated and plain. The foreman said, " You English can beat us in landscape and gold work, but you cannot touch our flowers." He commissioned me to send him a landscape painter, offering to pay him 10 francs per day. If it is true, as some assert, that living is cheaper here, this is better pay than can be got in England. A designer is employed. With us this part is overlooked, one man making, the other finishing, each according to his own taste. The French are very fond of light grounds and flowers. One suite, a portion of which is in the Exhibition, is beautifully decorated with Watteau subjects and Italian ornaments on a white ground ; no gold. The effect is very chaste. I believe arrangements are being made to place this class of goods in the London market. The foreman, speaking on this subject, said, " I will sell lots of these in your country." This will probably prove a true prediction.

The workpeople, so far as I could learn, are well paid and contented, the dress and general appearance being rather better than is usual with French workpeople. Judging by the price paid for flower painting I think a good workman may earn 3*l.* per week.

I forgot to mention some lac restoring in the Exhibition. It is done by French polishing. The pattern wants to be protected during this process, as a uniform gloss, very objectionable, and never found on native Japan lac work, is the result.

English workmen are highly esteemed in Paris, and many have been employed here.

BELGIUM.

Belgium exhibits articles of slate japanned, to imitate Florentine mosaic ; also articles of spa wood, some decorated with painted flowers, others with dogs. Here also are brooches formed of sprigs, in natural colours, and cut to the form. The painting is good, but the cutting out very objectionable.

HOLLAND.

Holland exhibits a large folding screen, the framework of wood ; each leaf contains two landscapes, painted on glass, and lighted with pearl.

These attract much notice, and are effectively painted. This I recognize as the work of an Englishman, who was apprenticed to Mr. Lane, late of Birmingham, who patented the process.

SPAIN.

Spain exhibits a large cabinet of spanish lacquer. It is a uniform rich transparent brown, dusted over with gold spangles ; no decoration.

ITALY.

More articles of spa wood, similar to Belgium, already noticed. Table and two chairs to match, with pearl and painted flowers, on a blue ground. The chair backs are surmounted with brass eagles. The surface of these is good ; the painting is coarse.

AUSTRIA.

Austria must certainly have been trying to form a museum of all the defunct styles, from the wonderful painted tin cats, that didn't sleep in the day, but kept wakeful watch, one at each end of my grandmother's mantlesheff, to that horrible pearl rosebud whose ghost is not yet laid. But it must not be supposed that all is bad. Here is some excellent figure painting and pencilling of the good old sort—bronze skies and landscapes, exteriors of buildings, imitation Japan and China work. The question naturally suggests itself—Do these old-fashioned things find a market at the present day ? Well, seeing that they are all priced for sale we must conclude such to be the case. Perhaps they may one day come back to us as novelties. Those gigantic round trays, which are only used in oriental countries, show that we have a rival in that quarter ; perhaps that gaudy group of pearl and stained silver flowers, with grotto border, may tell the same story with regard to the American markets. Some ebonized wood articles are very beautiful, with bands of gilding, after the manner of picture-frame gilding, some parts burnished. Good landscapes and flowers, painted, and left without varnish, are on some of them.

WURTEMBERG.

The japanned goods from this country and North German States make a grand show, but as they are mostly of tin or iron they do not belong to my province. Mr. Archer will report upon them, but I think those gold stars on coloured grounds may give a useful hint to papier-mâché decorators. I could only find three articles of papier mâché in this neighbourhood, and am unable to state precisely to which State or country these belong. The most remarkable point to notice in them is their great weight. The decoration was good, one folio being in the Etruscan style ; a small table-top, inlaid with pearl Japanese tree and bird, and a folio in the same style, all very well done.

PRUSSIA.

Large assortment of tin and iron goods, of which I shall notice two cheval screens and a lamp pillar. The point I wish to bring out in regard to these is the pleasing effect produced by the combination of neat

gilt beading and other cast and gilt brass work. The feet supporters and framework are brass; the screen in this case is sheet iron, but paper would be better, not being so good a conductor of heat. The centre, which is oval, and edged with a neat gilt bead, contains a well-painted figure subject; the border is imitation malachite; the whole effect charming. These will command a market wherever such things as cheval screens are used. The lamp pillar is of imitation malachite, which, viewed alone, would be but a common tin box, but the addition of a few ormolu mouldings and neat beads gives it quite a rich appearance.

RUSSIA.

We have now seen how the banished trade has contrived to exist in various continental countries, but in Russia it has found the most genial soil. Here it has attained such a state of perfection in one direction that it may almost claim to belong to the region of fine art.

A table top of papier mâché, inlaid in wood, is the most beautiful specimen of its kind I have ever met with. The design consists of aquatic plants, two flowers of the Victoria Regia being the principal objects; from one side of these rises an exotic plant, with gigantic bell-shaped flowers, upon which is seated a parrot, with gorgeous plumage; small water-weeds are trailed about the bottom, among which lizards and other small reptiles disport themselves. Pearl is used for the principal objects, and gold, artistically coloured or stained, for the stems and leaves. I know these materials have provoked much disgust by the way they have been misused in Birmingham, but there is nothing here to offend; nay, some of the effects required to complete the design could not be obtained with any other material. To conceive and carry out this design would require great artistic skill, and some acquaintance with botany, to say nothing of birds, reptiles, and insects.

There is also an assortment of fancy articles, some with landscapes, others with Landseer's favourite dog subjects, as "Dignity and Impudence." These are common-place, and have a German look about them.

In conclusion, I beg to thank those gentlemen to whose generosity this Report owes its origin, and to state, on behalf of my fellow-workmen, my belief that they are ever eager to avail themselves of such art culture as is within reach, and do frequently make sacrifices in endeavouring to carry out those principles that are inculcated by schools of design; but it is uphill work, and some freak of fashion will now and then, like a landslip, carry us, in spite of ourselves, to a lower point than that from which we first started. However, we are none the less mindful of the efforts of those friends of art whose labours tend to render such accidents less frequent and less disastrous.

ON JAPANNING IN GENERAL.

By THOMAS ARCHER,

JAPANNER, BIRMINGHAM.

THE important position of the Japan trade in Birmingham is by no means fittingly represented in the Paris Exhibition. Messrs. J. Bettridge and Co., though fully maintaining the position they have so deservedly earned, fail to give any idea of the strength and variety of the Japan manufacture. Since the decay of the fancy portion of the papier maché business, the energies of the trade have been directed towards the development of the useful, especially in connection with coal vases of great variety of shape and decoration; baths and toilet requisites, grocer's canisters, show bowls, and numerous other articles of utility and ornament. In these important branches Birmingham is entirely unrepresented. Messrs. Loveridge and Co., of Wolverhampton, to some extent, however, supply the deficiency by contributing a considerable number of trays, coal vases, baths, &c. Japanned bedsteads are exhibited by Messrs. Peyton, Winfield and Co., and Messrs. Harlow.

These, with a few specimens of decorated furniture from London, may be set down as comprising the whole of the manufacture exhibited in connexion with the Japan trade in England.

In the French department there is a quantity of goods exhibited in connexion with the Japan trade. The tea tray is an article that does not appear to be much used in France, and the grocers do not adopt the same method of showing their goods as in England, consequently there is little display in that direction. But iron chairs and tables, garden seats, &c., are largely exhibited by Trouchon, of Paris, who also shows richly gilt and japanned bird cages. There are also japanned zinc flower-pot stands, tasteful and cheap. There are japanned cast-iron clock fronts, bedsteads, and candelabra. Germain, of Paris, has a large collection of papier maché goods. Adt and Co., and Preis, of Strasbourg, also exhibit specimens of Japan work. There are besides several exhibitors of decorated furniture, and some very good imitations of Japanese lac work. Baths, toilet wares, &c., always japanned with us, are here generally left in the bright metal.

From Belgium there are several exhibitors, principally of painted woods, consisting of a great variety of fancy goods, such as snuff and cigar boxes, portfolios, &c.

The collection from Germany is both large and important. Prussia,

represented by Stobwasser and others, sends tea trays, fire screens, and japanned glass.

Kronig, of Vienna, sends a very respectable assortment of trays, screens, cabinets, chairs and tables, which though not remarkable for originality, are ornamented with care and skill.

Probably the largest collection of japanned work in the Exhibition comes from Wurtemberg, contributed by three manufacturers, and consisting chiefly of japanned tin and iron goods of the most useful class.

From Russia, snuff and cigar boxes, &c., in papier maché and wood, and a japanned table top of remarkable workmanship, of which more hereafter.

Nooyen, of Rotterdam, sends a large and attractive assortment of goods, consisting of folding screens, iron trays of well-known shapes, and other useful articles.

J. Soave, of Turin, sends a japanned table and chairs, and Catalani, some imitations of the Japanese.

The collection from Japan demands attention, and there are also specimens from China. Turkey and India also contribute specimens, and from Persia there are examples that will ensure attentive examination.

Having briefly endeavoured to give some idea of the quantity of japanned work exhibited, I now propose to examine the several productions more in detail, and to offer such general observations and draw such inferences as may have suggested themselves during the present inquiry.

Mr. Bettridge has an exceedingly handsome and creditable show of japanned work, chiefly of papier maché, inlaid with pearl and metals. The ornamentation generally is characterised by severity and correctness. The pianoforte case shows what good effect can be obtained by simple means when skilfully employed.

Mr. Bettridge's efforts for some years past have been devoted to the improvement of the coloured grounds, whose perishability and liability to damage have been great drawbacks to the manufacture. The trade has been cramped through being forced, except at a sacrifice of durability, to employ little else than black grounds. These, unless expensively ornamented, impart a sombre appearance to Japan work that contrasts unfavourably with many other descriptions of fancy goods. Mr. Bettridge, some time ago, perfected a maroon ground, which has all the hardness, durability, and susceptibility to polish of the black grounds. To this he has now added a white or ivory ground, which certainly has every appearance of durability. It looks as though it will wear well, but whether it can be brought to anything like common use remains to be seen. The goods exhibited with this ground, inlaid with metals, &c., have a very chaste appearance, and if the work was arranged as it might be, so as to do away with the final varnishing, it would be still further improved. This last coating of varnish soon gets a film over it that is highly injurious to light-coloured grounds.

The papier maché trade has to contend with powerful rivals for popular support. Embossed leather has gained great hold on public favour; and in the higher walks, articles, with panels of enamel or porcelain, mounted in ormolu or ebony, or with other combinations, take the

position once occupied by papier mâché. If the trade is ever restored to its former popularity, it will be by bringing new materials to bear in combination with those already employed, and such means skilfully used, will, I cannot help thinking, bring about renewed prosperity.

Messrs. Loveridge and Co., of Wolverhampton, show a numerous collection of japanned goods, consisting of trays, coal vases, baths, toilet wares, &c. In these goods there is a tendency to over elaboration, some having evidently been done purposely for exhibition, as the cost of production would take them out of ordinary sale. The workmanship is generally of a very creditable character, and the stand presents a very bright and gay appearance. Mr. Loveridge revives to a remarkable extent the question of taste, as to whether copies of natural objects, landscapes, or figures are suitable subjects for ornamentation. The principles laid down by the Government School of Art, in England, that flat surfaces should not be ornamented with painted imitations of objects in relief, has no doubt had the effect of narrowing the materials at the workman's command, and of imparting a more severe style to ornamentation generally, and it is quite possible that it has also diminished its attractiveness with the public. Mr. Loveridge, however, in the present instance, has not bound himself down by any such narrow scruples; on the contrary, in some of the goods exhibited, he goes to the full extent in the opposite direction. Trays, coal vases, &c., have landscapes, figures, and flowers painted upon them in profusion, but perhaps the climax has been reached in the ornamentation of a hip-bath, painted on the bottom and sides with imitations of sea shells and corals, which, though pretty to look at, are suggestive of uncomfortable things to sit or stand upon. There are, however, some very good specimens in the more correct style; a Victor coal vase, with a green diaper pattern, and gold lines, is an excellent example of the method of ornamentation approved of by the authorities of taste. The question is one of considerable interest to the decorative workman, and there can be no doubt that the adoption of the principles set down by the school of art has had the effect of bringing about a purer style of ornamentation, which, though it commends itself to persons of taste, has had the effect of diminishing employment in those branches which formerly required the greatest ability.

Messrs. Peyton and Peyton exhibit a number of japanned metallic bedsteads, patterns ornamented with taste and harmony of colour.

Messrs. Winfield and Co. also show several specimens in the same branch. In the ornamentation of the large bedsteads with the passion flower pattern, there is a great amount of elaboration, with not quite satisfactory results. In the bedsteads with the ornamented panels, the sprays of ivy are not quite true to nature, and the repetition disagreeable. The printed flower work introduced on other examples could be very much improved.

Messrs. Harlow's japanned bedsteads are unpretending in appearance, and call for no special remark.

In the French department there is a quantity of goods more or less bearing upon the Japan trade; of these the painted furniture is perhaps the most important. This branch of business is carried on extensively in Paris, employing a large number of hands, and the manufacture is certainly brought to a high state of perfection. In the manufactory

visited, the carpentry, stoving, and gilding were done on the premises, but the flower and ornamental painting was done at the workmen's homes. The prices stated as being given for this class of work were fair and remunerative. The gilding is done in the same manner as picture-frame gilding, and left unvarnished. The grounds are generally white or delicate neutral tints, and the seats and backs of the chairs and couches covered with tapestry, the effect being elegant in the highest degree.

Germain, of Paris, has a collection of tables, cabinets, trays, &c., profusely inlaid with pearl, and finished in a style made popular some years ago by a well-known firm in Birmingham. The arrangement of pearl produces quite a dazzling effect, and the finish of the flowers shows a study of nature usually wanting in that class of work. The shapes are not novel, and the goods show that unevenness of surface usual with inferior papier mâché.

There are several other exhibitors of japanned goods in the French department, but as their work presents no novelty in shape or decoration, it would not justify any lengthened description.

In the Belgian department the most distinguishing feature in connexion with japanning is the collection of goods made of a hard grey wood with a fine spotted grain and painted with flower and figure subjects. All the class of goods usually made of papier mâché are made in this material, and the natural grey colour of the wood forms an excellent background for the flower painting. The painting is very unequal in merit, but on some of the goods the flower and other subjects are painted with considerable skill and truthfulness. Altogether the variety and gaiety of this class of goods, with the moderation of price, place it as a formidable rival to the papier mâché trade.

Nooyen, of Rotterdam, exhibits a number of trays and baskets in papier mâché and iron. The shapes of the trays are time-honoured, being the well-known oval, Gothic, Victoria, elliptic, and convex patterns. The workmanship, done in a conscientious manner, belongs to a style that went out of fashion in England years ago. A large folding screen by this firm attracts considerable notice, it is made of wood japanned, with large glass panels let in. These panels, twelve in number, are painted on the back with views and figure subjects, backed with pearl for the principal lights. Whatever may be said of this style as a matter of taste, it is highly attractive, and the management of the pearl lights cleverly done. This style of work was introduced and patented by Mr. Lane, of Great Hampton-street, Birmingham, about twenty years ago, and in this screen the manner of painting, together with the choice of subject, leads to the inference that it is the work of one of Mr. Lane's former workmen.

Among the japanned work from Prussia, a pair of cheval screens, by Stobwasser, of Berlin, calls for special mention; the centre panels are painted with figure subjects remarkably well done, and the mounting or frame work in imitation malachite and ormolu, presents a very handsome appearance. The employment of imitation malachite with ormolu mounting appears to be in great favour, and is seen to good advantage and effect in a pair of large lamp pillars by Körner and Co., of Berlin; an iron tray treated in the same manner is also very successful.

Kronig, of Vienna, exhibits a large assortment of iron trays, many of

them expensively ornamented, but deficient in novelty. The shapes of the trays are well-known patterns, and would be considered in England as old-fashioned. Many of the trays are tipped with white metal tips, a plan which, though not unknown in England, is but little practised. This collection, though deficient in any marked originality, is a very creditable display of japanned goods, and places the capabilities of the producers in a very good light.

Theyer, of Vienna, exhibits a number of handsome wood boxes, with copies of natural flowers painted on the wood, and unvarnished. The painting on fine grained woods forms quite a feature in the German and Belgian part of the Exhibition, and I think it is a subject that deserves some attention from our fine-art manufacturers.

Zofferty exhibits a quantity of chairs, tables, and screens of japanned wood ornamented in imitation of japanned work, but without the quality of surface so remarkable in the original.

Heckett sends chess tables with glass tops set in ebony and rosewood, and stools treated in the same manner with glass panels in the sides and top, the panels ornamented in embossed gold and colours, in the interlaced or strap style of ornament. They have a very pleasing appearance.

Some bedsteads of varnished iron with ormolu mountings deserve mention.

Perhaps in a numerical point of view, the largest collection of japanned work comes from Wurtemberg, contributed by three manufacturers, and consisting of japanned tin and iron goods of the most useful class. These goods have no pretensions as high-class articles, but they are what they pretend to be, good, cheap, saleable articles. The Japan trade of Wurtemberg, though of comparatively recent date, has made rapid progress, increasing from year to year, till now one manufacturer of japanned tin goods employs 200 pairs of hands, sending their productions to all parts of Germany, France, Russia, and America. The principal export articles are bread and fruit baskets, sugar boxes, bird-cages, and lamps.

In a catalogue published by the authority of the Royal Wurtemberg Commission, an account is given of the Government schools for instruction in drawing and plastic art in its application to trade and manufactures. "One of the most urgent necessities of the day," it states, "is the providing of the rising generation of the working and trading classes, not only with the elementary knowledge offered in the primary schools, but also with that amount of technical and scientific instruction which tradesmen now require, in consequence of the increased competition amongst themselves, as also in consequence of the improving taste of the public, and the great improvements made in all the different branches of industry." A first step was made to carry out these views in 1818, by introducing into the Sunday-schools special classes for apprentices, but it was not till 1848 that anything like an organized plan for general instruction was arrived at. A Special Commission was appointed, charged with the care of providing good instruction for the youths engaged in manufactures. Suitable means were placed at the disposal of the Commission, and schools have been established throughout the towns and villages of the kingdom, for instruction in drawing during the day, with evening

classes for special circumstances. The amount of instruction thus given may be inferred from the fact that in the little kingdom of Wurtemberg, there are 101 schools, counting about 8,000 scholars. The conditions chiefly insisted upon in the organization of these schools are, "in the first place, the voluntary principle with respect to the frequenting of the schools, and the demand that fees should be paid by the scholars, a demand which, however small the fees might be, was considered of importance with regard to the well-known fact, that anything to be had only for payment is much more appreciated than what is given gratuitously." These workmen's schools are already proving their beneficial influence upon the industry of the country, and the importance of such training can scarcely be overestimated.

Italy does not appear to have made much progress in japanning. Of the two exhibitors, J. Soave, of Turin, sends a table and two chairs, profusely inlaid with pearl ornaments and flowers, but the pencilling and finish do not show the dexterity that belongs to a practised workman. The same remarks apply to the imitations of the Japanese by Catalina.

From Turkey there are two trunk-shaped boxes, which, though deficient in manipulative skill, show considerable judgment in the arrangement of design and colour.

A case of goods from Persia, consisting of boxes, book-sides, &c., exceeds in some respects anything of the kind exhibited. Owen Jones' "Grammar of Ornament" has made us familiar with the style of Persian designs, but here may be seen the original in all its glory. The surface does not present that smoothness and polish we have been accustomed to, but for careful elaboration, richness, and subdued harmony of colour, it deserves all praise.

The contribution from Russia consists of snuff and cigar boxes, &c., chiefly of papier-mâché, well made and carefully ornamented, but differing in no essential respect from work of a similar class from Germany. The inlaying of pearl and metals is, like the German work, neatly and prettily done. There is, however, a table top profusely inlaid with pearl-shell, and painted up in imitation of birds, flowers, lizards, and other natural objects. The different objects are skilfully arranged and elaborately finished, with a strict regard to the natural forms, and, as a mere piece of imitative art, is superior to anything exhibited by the Japan trade.

There is a large collection of Japanese lace work. The main features of this kind of work are so well known that any lengthened description would be entirely unnecessary. It presents all those peculiarities of surface and manipulation that have never ceased to puzzle English workmen. The Japanese have hitherto successfully resisted all attempts to discover the nature and composition of many of the materials they employ. The compositions of their varnishes, pigments, and gilding are alike clouded in mystery. Even their neighbours, the Chinese, do not by any means reach the standard of the Japanese; most of the Chinese work appears crude and unfinished by comparison. The study of the Japanese is undoubtedly one of great interest, and a knowledge of the means they employ would probably be of great value, but it is only by conjecture that we can arrive at any conclusions on the subject. The

present Exhibition abounds in imitations of the Japanese work, but the imitations are confined to copies of their style of designing—a style which, unaccompanied by their proficiency, does not merit or justify the abundant use to which it is brought. Few of the Japanese designs are beautiful in the abstract; a great butterfly with a bamboo cane sprawling across a small tray can scarcely be called a beautiful or graceful design, but it is their originality, their uniqueness, their manipulative skill, and, above all, their knowledge and mastery over difficult material, that give their productions such value in public estimation.

Any notice of this description professing to give an account of the present position of the Japan trade would necessarily be incomplete without casting a retrospective glance at the great Exhibitions of 1851 and 1862, and endeavouring as far as possible to estimate the progress, or otherwise, that has occurred in the interval. This is the more difficult from the circumstance that at the previously-named Exhibitions the English Japan trade was fully, not to say powerfully, represented, nearly all the principal manufacturers striving for precedence, while at the same time the foreign element was only of the most meagre character. Either a very limited trade was being done on the Continent, or the manufacturers did not think it worth the trouble and expense of exhibiting. But in the present Exhibition the case has been very much reversed. Two manufacturers only in England have thought it necessary to compete, and however good their contributions may be, it is evident that they only represent to a limited and imperfect extent a manufacture so varied and extensive as the Japan trade. On the other hand, the Continental japanners, considering the very poor show they have made at previous Exhibitions, have come out in great force, and if they have not succeeded in reaching the highest point of workmanship, they have at least been able to show a very useful, and, in some respects, an excellent class of work.

I think it will be conceded that in the higher branches of what may be called the regular Japan trade the English are far in advance of the foreign exhibitors. In the papier-mâché branch especially, whether for form, surface, or ornamentation, the English work is greatly superior, but taking into consideration the comparatively recent origin of the trade on the Continent—taking into view the perseverance, sobriety, education, and abundance of labour, I am bound to say that the time is not far distant when the Japan trade of this country will have to encounter a fierce and determined rivalry.

It is not, however, in all branches that this country can claim superiority. In most of the small goods exhibited, such as snuff and cigar boxes, brush backs, and other articles of a similar class, the superiority of the foreign workman is incontestable. The neatness and finish with which these articles are ornamented—most of them being inlaid with pearl and metal or wirework—is well worthy of commendation. The painted woodwork is another feature exclusively Continental, and worthy of consideration. Of these woods the “*Erable blanc*,” or white maple, is the most extensively used, and, to judge by appearances, very successfully competes with papier-mâché. It is very durable, possesses

great ductility, and requires no more stoving than is necessary to dry the ornamental painting, and is sold at a very moderate price.

If this Exhibition will teach japanners one lesson with greater force than another, it will be the necessity of seeking new combinations, of not depending on japanned work alone, but endeavouring to find materials from other branches of industry that will combine advantageously with their own. It is in this direction, and this alone, that the Japan trade, and more especially the fancy trade, must look for success; and this path, intelligently pursued, will, I believe, lead to renewed prosperity.

On the whole I think it may be fairly said that this Exhibition does not indicate any decided advance on the part of English japanners; it is undistinguished by any remarkable novelty or new development. The small number of exhibitors may to some extent account for this, but even with this allowance the result is unsatisfactory.

The foreign exhibitors, however, show a degree of vitality that former Exhibitions did not lead one to expect, and though their present demand may not lead to the production of very high-class work, there is enough to show that they are progressing in a healthy direction.

NEEDLES AND FISH-HOOKS.

By WILLIAM GUISE,

NEEDLE-MAKER, REDDITCH.

AN impression has prevailed for some considerable time in our needle manufacturing districts that England—so long famous for her superiority in needles, and her exceptional facilities for producing them in large quantities—is gradually losing her position abroad, and that German competition is telling very materially on her foreign trade, more especially in the second and lower qualities of needles. The Industrial Exhibition at Paris has afforded opportunities, to some extent, for testing how far this idea is correct.

In the first London Exhibition (1851) this branch of manufacture was represented almost entirely by home produce, and the few needles shown from the Continent were obviously of marked inferiority. Again, at Paris in 1855, and London in 1862, and at other Exhibitions, a great superiority was maintained in British needles. Probably in our Exhibitions the distance, and consequent expense, &c., may account somewhat for this lack of German exhibitors, but in Paris the facilities and expenses of transit are about equal.

In the eight cases of needles now being exhibited in Paris by English manufacturers—Messrs. W. Bartleet and Sons ; H. Milward and Sons ; W. Boulton and Son ; Kirby, Beard, and Co. ; Hayes, Crossley, and Bennett ; G. Townsend and Co. ; W. Heath and J. F. Milward ; the three last named showing machine needles only—a cursory examination only, side by side with those of German manufacture, is necessary to determine that, for quality of material, clearly pierced and well fashioned eyes, elasticity of temper, points, &c., this country remains unequalled in the production of superior needles—from the small gloving, tailoring, and household needles—darning, straw, and tapestry—the cutlery needles of the surgery, to the large needle for packing, netting, and sail-making ; and though the appearance may be somewhat insignificant in the "Great French Show," and from which our large manufactories can be but poorly judged of, these cases represent the world's great emporium of needles (Redditch), where one hundred millions are made weekly.

Of this vast quantity a good proportion has for many years been made as cheap goods, known in the trade as "Steel London ;" of this class of needles it is necessary more particularly to speak ; it employs a great number of hands, but has been falling off for some time, and getting into

the hands of German manufacturers, the cause of which I will endeavour to explain, as I think the difficulty may be overcome by the individual and combined efforts of our manufacturers.

Germany is represented by seven cases of needles, five of which are Prussian, exhibited by Messrs. Dubois, Printz, Lammertz, Kimmerman, and Litser, most of which, by the aid of a lens, I was enabled to examine. The best needles in each of these cases consist of a class of goods about equal in quality to our "Steel London," interspersed by a few samples of sewing-machine needles, principally by Lammertz. Of tapestry, and other fancy needles, not worthy of special notice, France, Austria, and Bavaria exhibit one case each; in the two last no peculiarities are discernible, except in the display of a few samples of machine needles.

The case of French needles consists of one sort only, manufactured expressly for making stockings by machinery. They are flatted from end to end with a kind of crochet-hook point, but of which I was unable to obtain a sample; to all appearance they are easy to make, and worth the notice of English manufacturers; they are exhibited by Messrs. Bernard, Flury and Fournier, Gondrillers, near Laigle. Most of the small needles in the German cases are of very inferior workmanship, some faults so palpable, that it is obvious that neither manufacturer nor artisan could know the qualities necessary to constitute a good needle; the eyes are not central, nor pressed out clearly, and have a burr or sharp edge left on the inner surface, that would cut the thread; and those sold under the same brand were very irregular in temper, some too hard, others too soft, with in no instance that elasticity of texture, which characterizes the best English needles; in numerous instances the heads were not ground, nor the eyes burnished, and what is worthy of notice is, that all the best Prussian needles have gilt eyes; a proof which, although applied to some best English-made needles, as a rule is most generally allotted to lower class goods.

In gilding, the Germans are in possession of a method known only to themselves, by which they can perform this process at a much cheaper rate than English makers, giving a greater body of what appears to be gold, at about a sixth of the price paid in our workshops. The electro-gilt soil, and other large needles of Messrs. W. Boulton and Sons, are equal in all respects to those shown in the German cases, but cannot be got up here at a similar price. This class of gilding being a chemical process peculiar to the Germans, is a problem for our manufacturers to solve by means of scientific investigation.

A word, *en passant*, on sewing-machine needles. Of these needles one-tenth exhibited are of English make, which tells its own tale, with the fact that while France and Prussia have produced probably as many sewing-machines as England, they are depending almost entirely on this country for the needles wherewith to work them; and though a few machine needles are shown in each German case, any one who will take the trouble to compare them with those in the cases of Messrs. Towns, Heath, Bartlett, and Milward, of English make, will find them superior to those of Germany. The number and variety of sewing-machines exhibited, suggests the importance of cultivating this branch of needle-making, for it is probable that sewing-machines may even

materially influence the consumption of the ordinary sewing-needles. Fifteen or twenty years back the sewing-machine was scarcely known in the needle district; now, nearly one thousand people are employed exclusively in making machine needles. There are several hundred varieties of English make, and a large demand for them all. The general cry against the German-made machine needle, is defective temper.

Of FISH-HOOKS.—If all of English make were withdrawn from the Paris Exhibition, and any disciple of Izaak Walton wandered thither to seek these articles, he would have but few samples to choose from. There are the bone and bronze hooks of the antiquary, exhibited by Clarke and Brevet, of London; others not quite so antiquated are exhibited in a German case; and a French trap-hook with an apparatus arranged to strike the fish with another hook while it is engaged with the baited one; and judging from its bulky proportions, and the natural shyness of fish, it seems more calculated to scare away the fish by many chances, than ever to trap it; upon which of these the choice of piscator would fall it is hard to say. The manufacture of fish-hooks belongs almost exclusively to the British; even in Scotland and America, where fish-hooks are manufactured, the work is principally performed by English hands.

To proceed; there are two methods of producing "Steel London" needles in our English manufactures; one to use inferior material, and employ corresponding workmanship; the other to put needles intended in the onset for best, but which have proved defective in one or other of the manufacturing stages, unfitting them for best goods, therefore they are sold for "Steel London." If best needles could be prevented from being reduced to "Steel London" in the processes, and the market supplied with cheap needles made expressly for the purpose, there is no reason why English manufacturers should not successfully compete with those of Germany; but standing in the way of this are several slow, cumbrous, and uncertain processes; in the scouring-mill alone millions are annually reduced from best goods to "Steel London," and even worse than that will sometimes pass for that quality, which up to this stage have cost more than inferior needles should do when finished.

The "hardening," too, is another uncertain process, but, judging from results, is better, though slower, than the German system, yet still open to much improvement. It is on the combined success of these two processes ("hardening" and "scouring") that the temper of the needle depends, and which, from a combination of circumstances, too frequently fails. The result is, the "scourer" blames the "hardener" for leaving them too low; the hardener blames the scourer for over-weighting, and thereby over-heating them, and reducing the temper; the master blames one or the other, sometimes both, and there the matter ends, in loss and failure; and, by these bungling means, we keep plodding on, in constant hot water; and are, in this particular instance, as primitive as when, generations back, our forefathers hammered them into shape, one at a time, by hand labour. The Germans, on the other hand, employ machinery successfully for many processes of which we know little or nothing. It is to them we are indebted for what we know of the "pointing" machine, known to be a success, and by means of which all their needles are pointed, and this, too, in a country where

labour is cheaper than it is in England. George Printz, one of the German exhibitors, has obtained a gold medal for "scouring" and other machinery now in use in most of their needle-mills, with which they *claim* to scour more needles by four-fifths, in forty hours, than our system will in seven days; and (if true, as they assert) avoid the danger of over-heating, and thereby spoiling the temper of the needles. They have a machine for "cutting," which leaves the wires straight without the aid of fire, so that our rubbing process is altogether dispensed with; and also a "bluing" machine, worked by two little girls, doing the work which, in our system, would employ five women. "Tempering" and "cheek-filing" are also done by means of machinery. All these machines are shown in the Paris Exhibition; but, in consequence of their not being in action, I could not form a reliable opinion of their merits. Experience has doubtless made many of our manufacturers cautious in the introduction of machinery, as, in the memory of many living, it involved almost martyrdom.

When "stamping" was introduced, about forty years back, it resulted in a riot (1830), and the stamps being destroyed by excited and infuriated hand-workers. They are now adopted in every manufactory, and incalculable benefit has been the result. Again, in 1840, "hardening" in oil was introduced by Mr. Joseph Turner, to supersede the old *water* "hardening," which "crooked" the needles, and necessitated every needle being hand-straightened, a slow work, sufficient in itself to "block up" the trade; for this he was, after repeated mobbings, indignation meetings, and insults, compelled to leave the town, at considerable loss and inconvenience, returning in a few years to find, as with the stamps, his method introduced into most of the manufactories. A "pointing" machine was next introduced by Mr. I. Chambers, which resulted in the machine being broken to pieces by the "pointers," Mr. Chambers striking the first blow with a hammer, which he handed to the bystanders to complete the work of destruction, not because the machine was a failure, but that the opposition was too much for him. It was thought by those who were concerned in the breaking up of the machine to be a great victory on their part, and the excitement was at a fearful height. The following is a sample of the doggerel sung about the streets on the occasion, and is given here to show how strong was the feeling against machinery:—

"It was on the 24th of June, in eighteen hundred and forty-four,
The pointers brave in union joined to prevent their wages from sinking lower.
A machine then, at a certain shop, for pointing needles was well made;
Says the pointers, 'We must make it stop, or it will be the ruin of all our trade.'
And in that great and glorious day these brave lads met to make some rules;
And such manly sense did they display as plainly showed they were no fools."

A remnant of the old feeling still exists, but is fast giving way to the growing intelligence of the times. Messrs. S. Thomas and Sons are now pointing needles by the aid of machinery, without any apparent opposition. It is quite plain that while our manufacturers have been depending on their reputations, making little or no progress by the introduction and the application of machinery, our great rivals, the Germans, have made rapid advances in this direction. Machinery being extensively

used in their manufactories is doubtless one cause why they are taking from us the bulk of our trade in the commoner qualities ; and if English manufacturers *will* let them take away these, it is merely a question of time for them to secure the better class also,

To maintain the character English-made needles have gained in the market, and to enable manufacturers to make cheap needles at as low a rate as possible, it is necessary to ensure the success of making the better or any quality of needles without the risk of their being spoiled in any one of the processes. There should be as much certainty in making a "packet" of needles to any required quality as there is in making a watch, or building a house, but there is not. Still I think it might be done, if two obstacles could be removed. One of them is the frequent irregularity found in the quality of the steel, and the uncertainty of obtaining the better quality at the higher price ; the other is, the required temper should always be obtained in the tempering-shop, and no after process should, under any circumstances, be allowed to alter that temper. The "hardener" then would be solely, and, I believe, willingly responsible, and would seldom fail.

From late improvements in the art of steel making, even these last few months, there is good reason to hope that the first difficulty is fast being removed. The investigations and discoveries of Bessemer, Richardson, Calvert, and others, who have carried science into the workshops, must, if persevered in, eventually end in the quality of this most important material being no longer a question of guess, but one of certainty. Even now the ingredients of steel are not known, the chemical action of some of the gases on steel when in a heated state—hydrogen for instance—is still an open question ; and as the steel is, with some little exception, heated for hardening in carburized hydrogen, and the small size of the needle considered, it seems of importance that this should be known even by the workmen. Neither are the influences affecting the qualities of steel in process of manufacture under perfect control, so that like results can at all times be insured, or a certain quality of steel once obtained be always obtainable. The latest discovery is, that the structure of iron is cellular, and that by forcing into these cells either silicon, boron, or carbon, steel is produced. The carbon (diamond), on account of its being the hardest, makes the better steel. Should these different steels get mixed, the result must be irregularity of temper, which no amount of care on the part of the hardener could remedy, and this irregularity—or the uncertainty of obtaining suitable steel—has had to be borne at an expense known only to needle manufacturers, and it is, in a great measure, owing to the fact that English needle manufacturers will condemn all injured needles until they have obtained the quality they require, that their needles stand better in the markets than those of any other nation, coupled with the advantage of being in a position to purchase most of the best needle wire that is made. Though English steel manufacturers are not able at present to overcome all the difficulties standing in the way of their producing at all times what they require, they are in advance of all other manufacturers of steel, and needle-wire manufacturers, from long experience, have learned the particular kind of steel requisite for needles, and when

they have steel wire suitable for them, they have always a market for the wire at home. It is either from undervaluing the importance of good steel, or not being able to obtain it, or, when obtained, spoiling it in firing, that the German small needles are so inferior in temper. On a sample card in the case of M. Dubois showing the processes, the "stiffs" are so badly burnt that an English manufacturer would condemn them as "waste," plainly showing that if the Germans knew it to be a defect they would not have exposed it as a sample of workmanship in so conspicuous a place as the French Exhibition, where the highest possible perfection is supposed to be aimed at by every exhibitor.

In Class XI., No. 64, samples of blister steel of Prussian manufacture are shown, which, examined with a lens, present many defects, being badly converted, and irregular both in colour and crystal. The outsides of some bars are over carbonised, and the middle black from not having enough carbon. These samples melted into cast steel would not make passable steel for such small substances as needles.

In reference to the temper of needles being brought down after leaving the tempering-shop too much could not be said, this being the rock upon which needle manufacturers of all times have been splitting. I would cast no blame upon "hardener" or "scourer;" both work according to rule, but the rule is defective, involving considerable loss and inconvenience, and demands a most careful and minute investigation, so that a remedy may be provided for one of the great causes which prevent our sending into the market needles at so low a rate as those made in Germany.

It is said that "to know a disease is to be half way to a cure;" that we know the disease in this instance (if I may use a figure to illustrate a fact) is not to be questioned, and it is simply the needles being heated after the proper temper has been obtained.

There is considerable difficulty in obtaining friction without heat, and needles after they are tempered undergo an immense amount of friction, and it is under this process they are so likely to sustain injury. It requires a temperature of 400° to affect in any way the temper of the mildest needle steel, and, consequently, if in "scouring" needles could be kept under say 300°, they would leave the scouring-mill with the temper exactly as it left the tempering-shop; and until some means are adopted to effect this object, it will be impossible for us to compete successfully with our powerful and energetic rivals. Other subjects affecting our relations with the Germans may be profitably considered, but it is not needful to detail them in this paper; such, for instance, as the price of labour in the two countries, computed at 20 per cent. lower in Germany than here, against which may be urged our advantage in the purchase of steel and coal; but on account of the needle being almost exclusively a matter of labour, these advantages cannot be considered other than slight as an equivalent for cheap labour. One great difference exists between the English and the German artisan. With the former a mechanic is paid at a much higher rate than a labourer, and can command a price according to his ability as a workman, and if he be a persevering, energetic man can rise into better circumstances. With the latter all work is more on an

equality. Making needles or making roads would make but little difference as regards his wages. The workman is born, lives, and dies in his class, the gulf being so wide that separates the two classes—employer and employed—that though never so many attempt to pass it, few succeed, and the few who have left this country for Germany to make needles have invariably taken the earliest opportunity to return home.

It will be readily seen that this subdivision of labour in Germany enables them to get up much larger quantities of needles than our system will allow; but, where quality is the aim, the peculiarities of some branches prevent this subdivision, some processes being so intimately connected with others that it is next to impossible for them to be done properly without the same workmen doing the whole; and to some extent it is probable that their questionable method is one reason of the inferiority of German needles, plainly indicating that the English workman requires and gains a more extensive and general knowledge of his trade than does the German, who is engaged solely in a single branch, easily acquired, and without that thought and responsibility which is indispensable in a British workman, and hence the reason of the great disparity in pay.

It is thought that the German system of compulsory education is placing their artisans on a level with ours; but their education is carried no farther, as a rule, than reading and writing, unaided by Mechanics' Institutes, Free Libraries, and Lecture Halls, sources whence self-culture and sound education are stimulated and developed, and without which the elementary is of but little use or value. These institutions are peculiarly English, and, as a consequence, the Germans will be a long time in overtaking us in this direction; and so long as our institutions continue to provide and dispense a superior education, so long will the English mechanic maintain his position of superiority.

From the foregoing it will readily be conceded that there is a necessity for our manufacturers to set about finding remedies for the defects at present existing in our system of manufacture; and it is equally important that they should keep pace with the age, taking advantage of all the means and appliances science is developing, applying in every possible way all improvements in machinery, and taking special note of the advances in the arts that bear directly or indirectly upon this branch of industry. It is also not less needful that our manufacturers should, in the interests of all depending upon the needle trade for sheer sustenance, content themselves with the moderate profits of their German competitors, the aim being, not to realize large profits from limited trade, but to extend in every possible direction their connexions, finding compensation for a lower rate of profit in an increase in their returns. We now deservedly possess a world-renowned reputation for the superiority of our needles, but how long we may retain that supremacy is doubtful. Some people even imagine that the acme of our trade has been reached, and confidently predict its gradual decline; but I am of opinion that if these questions, involving vital issues, are carried into action, our trade may be saved from German aggression, and continue, as hitherto, to provide ample remunerative employment for our work-people, fraught with blessings to the industrial community of the English needle district.

ON SHEET AND PLATE GLASS.

By RICHARD PEARSALL,

GLASS BLOWER, SMETHWICK, NEAR BIRMINGHAM.

IN presenting you with my Report respecting the sheet and plate glass at the Paris Exhibition, I wish to confine my remarks to a short comparison between the different kinds of glass with which I am acquainted. The English, French, and Belgians are the chief exhibitors of sheet and plate glass. After a careful examination of the specimens of glass exhibited in the Paris Exhibition by the exhibitors of the three countries, I am fully convinced that no other country occupies so high a position as our own, so far as the quality of glass is concerned. The foreigners succeed in making their glass of a whiter colour than the English, owing to the purity of their sand, which contains less iron than that used in this country; but they lose most by their want of proper attention in the manufacture and finish of their glass, which glass of a superior colour must always possess. This is more particularly in their window glass, which will not bear a comparison with our own make. The quality (in the metal itself) of the plate-glass is on the whole fair, but the surface of the glass is "crized;" that is where the foreigners are principally deficient. There are, I believe, no exhibitors of English plate-glass, so that a comparison can only be made between the foreign plate-glass as exhibited and the English plate-glass as it is made in this country, and of the quality of which I am capable of judging. It is in the production of coloured glass that the foreigners do excel; some of their flashed (coated) glass is very beautiful; and we must certainly yield the palm to the foreigners in this respect.

Belgium exhibits some enormous cylinders of sheet window glass which cannot possibly be less than 115 to 120 English inches in height, but which in their present state are useless, and have nothing but their size to recommend them.

The company of St. Gobain also exhibits some very large sheets of plate-glass, the production of which must have involved great care and expense. As regards the cost of materials I had no opportunity of making inquiries, but one thing is certain, that the price of coal in France is far higher than in England. The Belgian coal is about the same price as our own.

The foreign glass shades are of good colour, but the sizes are much smaller, and in quality and shape are not equal to those of English manufacture.

From a conversation with some of the workmen both at the Exhibition, and at their works, I discovered that the wages were after the same tariff as at home.

I consider that one of the reasons why the foreign manufactures are of inferior quality to that of our own, is owing to the fact that their artisans have not the advantage of being provided with proper materials for carrying out their work. The conditions and divisions of labour in the glass trade abroad are regulated as elsewhere according to the peculiar nature of the manufacture which varies according to a variety of causes connected with the production of glass ; but for coloured glass for ornamental purposes we have much to learn from our neighbours.

From what I saw of the habits of the French people I consider that their mode of life is peculiarly foreign to the English mind. They appear remarkably fond of imbibing their favourite wines while exposing themselves to the public gaze.

ON TABLE AND FANCY GLASS.

By THOMAS O. BARNES,

PRACTICAL GLASS WORKER AND ARTIST, BIRMINGHAM.

HAVING been requested, while visiting the Paris Exhibition, to report on the Flint Glass Department, I now proceed to lay before you the result of my observations on both the flint and chandelier work in Class XVI. of the Exhibition.

I shall reserve general observations for the conclusion of my remarks, and proceed at once to notice whatever I conceive striking or peculiar in the work of the various nations exhibiting, contrasting as I may think necessary the foreign with the English workmanship.

In the French Department, the St. Louis Company exhibits a large vase of beautiful design; and table-glass of every description shows marked improvement in design, workmanship, and colour, but they are behind the same kind of workmanship in the English Department, particularly in detail. For instance, in affixing the handles to jugs, and similar articles, there is a lack of care and finish which is not found in English manipulation of the same kind. There is this distinction, too, in the mode of workmanship in England—all that class of work is done by hand, while in France the lighter work is blown in wooden moulds. I have seen this myself in one of the glass establishments in Paris.

Monot, in the Rue de Paris, Pantin, Seine, exhibits a fine class of fancy goods, such as ice-jugs and fancy wine-glasses, beautifully designed, and of various colours. I consider, however, that they are inferior to the English workmanship in the shearing department, being heavy and marked at the top. The foot of the glass, too, varies in shape and size, and is frequently scratched. Our masters would decline to receive such work from the hands of their workmen. They are far superior to us, nevertheless, in their coloured department, in which they have long been celebrated. Their ruby especially is most clear and brilliant in colour, and approaches nearest to the tint of the ancients.

The Baccarat Crystal and Glass Company exhibits a very fine large vase, and a centre tazza, very beautiful in design, but most of the parts are pressed in moulds, and afterwards put together. They are cut at the joints, so as to fit close, and it would be very difficult for any but a practical artisan to find out where they are joined, so accurately do the mitred parts fit together. The colour, on the whole, is dim, and has a slight tinge of sea-green, being in this inferior to many others of the

French exhibitors. They have some beautifully-designed jugs in antique styles, which denote great taste and spirit on the part both of the employer and artist. But the observation before made applies equally here—there is a want of that pure crystal tint which is the special beauty of flint-glass.

M. Maes, of Clichy, Seine, has a splendid service of thin flint-glass, decanters, clarets, and cups, &c., distinguished for lightness of make suitable to design, but the gilding is not in harmony with the lightness of the work. They must, however, have been produced by highly skilful workmen.

I pass over a variety of French work of considerable merit, merely distinguishing that which I conceive the best in the French Department, and that from the study of which the English artist would derive most benefit, as containing workmanship of a kind, in some particulars, not so highly developed in England, and I now proceed to the Dutch Department.

There is only one exhibitor deserving of special notice—E. Wessel, of Rotterdam, who, in the cutting department, is remarkable for skill in execution, though the design, in many cases, is of an inferior kind; but the diamond-cutting is very superior, and of remarkable brilliancy.

In the Belgian Department there is only one exhibitor of flint work, the Herbatte Company, near Namur. This Company exhibits two very large flower-stands, the largest I have ever seen, of simple but beautiful design. Though they are in several pieces, and the workmanship, in detail, not of the most finished description, the effect on the whole is good. Their coloured department is very good, but overloaded with gilding, which conceals the workmanship, without adding much to the beauty of the original design. Should the designer add heavy gilding, it destroys the effect of both.

Prussia is represented in this department by but one exhibitor who calls for special notice, viz., Count Schaffgotsch, of Schreiberau, near Hirschberg. He exhibits vases, cups, and flagons of most beautiful design and rich emerald green, ornamented with gold, which has a very fine effect. The designs of the vases are chiefly Greek, but the chief distinction consists in the colour, which is very rich indeed.

The minor German States exhibit nothing calling for special notice.

Count Harrach, Neuwelt, in Bohemia, exhibits a very fine class of dishes, in a variety of forms, and a few jugs worth notice. This department of the Austrian glassmaker has lately much improved in the style of blown work.

The firm of Hegenbarth, at Haida, Bohemia, exhibits a class of light wine-glasses of a very good description; but some of these glasses, instead of being sheared, are cut off by the glasscutter, which leaves the finish imperfect.

H. Ulrich, of Lugeek, Vienna, has a very fine service of table-glass, deserving much attention for the manner and style of its execution. There is also an antique vase of curious design, with ornamental handles of enamel, which are inserted into the body of the glass through drilled holes, and screwed internally; also, vessels bossed with imitations of precious stones, the execution of which is excellent.

The Austrian Department, on the whole, in table-glass and ornaments is very creditably represented, and, in my opinion, is next in merit to the French.

Spain has only one exhibitor in this species of glass work, M. Fraden of Barcelona. His table-glass is of a very curious description, uniform in tone and colour, and also in style and design.

The same may be said of Portugal.

From the Imperial Glassworks, St. Petersburg, there is a large and varied collection in opaque glass, consisting of almost every tint of colour. Considering that the trade is so young in Russia, the workmanship is good, and would well repay careful examination.

In the Italian Department is one of the most interesting collections of glass, most notable among which is the collection of Dr. Salvati, whose wine-glasses, coloured in the Venetian style, and flowers worked with great delicacy of touch, deserve particular notice. There is also a curious old chandelier, highly ornamented, which reflects much credit on the talent of the designer.

F. Rossi, of Macerata, glass-engraver, exhibits engraved portraits of the Royal Family of England, remarkable as much for accuracy of likeness as perfection in finish. These are the best engravings of the portrait class in the Exhibition.

J. B. Lyon and Co., Pittsburg, U.S., exhibit articles in moulded glass superior to any I have ever seen. It is impossible to detect the marks of the mould. The wine-glasses are as thin at top as if made by hand, showing that it is possible, by careful manipulation in pressing, to make moulded glass equally fine as by handwork. There is a large moulded jug, of which the handle and body are pressed out of one piece of glass. The colour, however, is imperfect, and the design nothing remarkable.

In the English Department there are evident signs of recent improvement in design and execution, more particularly in the pure crystalline clearness of the material, in this being superior to the exhibitors of any other country. The Venetian style in this department is very ably executed, and denotes a clear conception of the original, though it must be admitted that in the minute details, it is all done by hand. This, however, is more ornamental than useful; we should try to combine beauty of design and utility, so as to preserve beauty of form without losing the essentials which make ornaments in glass valuable to the community at large. In this respect the English exhibitors are before all foreigners.

Defries and Son, London, exhibit some very fine specimens, combining the essentials of beauty and utility. There is a celery stand and bowl, which has been purchased by the French Emperor, of modern shape and of light and beautiful execution; also a light tankard bought by Her Majesty the Queen, which for lightness of make and clearness is remarkable. It is beautifully ornamented with Roman figures, executed by the etching process. They have also a service of jewelled glass, beautiful in tone and colour, and very light in material; the jewelling is an after process, and is executed subsequent to the piece passing from the hands of the glassblower.

Mr. Pellatt, of London, exhibits claret and water jugs of a very

superior description, and some wine glasses with twisted stems of a very light description and very well made. The engraving on these is very light and delicate. There are two Greek water jugs with the engraving in the same antique style, and indeed in a high degree worthy of recommendation for design and finish. All this case of glass is of superior quality.

Mr. Greene, King William-street, London, also exhibits rare specimens of glass work of rich and rare design. There is a service richly cut, consisting of forty-eight pieces, the claret jugs and cream bowls of which are of the very finest description of workmanship, the other pieces of the same service are each in their kind worthy of the highest commendation. The handles in this case are of superior shape to any I have seen in the Exhibition, and the cutting and lustre of both in idea and execution are of the best description. He also exhibits a chandelier, that for beauty and originality of design and lightness in material, is superior to anything of the kind I have seen.

Mr. Dobson, of London, has jugs of a very fine kind, one oval and another Greek, which are exquisite in design and workmanship. The engraving is superior to anything I have ever seen. I was told by the agent that they were sold for 300 guineas, the greatest price I have ever known. There are great varieties of things in this department worthy of high commendation, that can only be glanced at in a cursory report like this.

Mr. Green, Upper Thames-street, London, also exhibits a very good class of goods; there are salt stands of new design and of very good workmanship. There are twisted rings arranged in a trefoil style, into which the salts are dropped, making the whole as simple and useful as they are beautiful. He has also an old Roman jug, in which the shape and engraving are alike beautiful and in harmony, and flower stands well worthy of notice.

Mr. Copeland, of London, has a very fine set of dessert dishes, beautiful in colour and very richly cut. There are likewise claret jugs and wines executed in a very fine style of workmanship and of superior colour, which is much enriched by cutting.

Messrs. Powell, of London, who exhibit several fine specimens in the Venetian style, have distinguished their work by boldness of design and superiority of finish. Much time and trouble must have been bestowed on perfecting this branch, which alone shows that British workmen are capable of the highest artistic finish when they devote themselves to any particular branch of their trade. There are other fine specimens in various styles that must be passed over.

Messrs. Phillips and Pearce, London, have a table of glass of the most magnificent description and extensive variety. There are specimens of every order and description, each varying from the others in design and finish. The Compotes, with filigree work round the top and hanging rings, display a clear perception of all that is artistically beautiful and elaborately neat. The workmanship is very fine.

Mr. Millar, of Edinburgh, has some very fine jugs, with a peculiar shaped lip, and of Greek body with Greek figures engraved, of the best

description of figure engraving I have seen. The drawing of the figures is easy and graceful, and the whole finish elaborate and neat.

Mr. Osler, of Birmingham and London, exhibits glass chandeliers, beautiful in design and workmanship. The arms are large and beautifully curved, very difficult to make and preserve the symmetry of the curve. The smaller chandeliers are elegant and chaste, the small drops are like drops of pure water, so clear has the metal been worked, that it looks like a fountain of crystal.

There are several other exhibitors, both English and foreign, whose works I would like to notice, but I think those I have enumerated will suffice, as they have specimens of the best workmanship in Europe, and my Report is already too long. I must not, however, conclude without contrasting what struck me as most peculiar in the design and style of workmanship in the English and foreign departments, and here I think the English artisan stands at the head of his brethren of the craft, though there are some points in which he may usefully learn a lesson from foreign exhibitors.

In England there has been latterly a marked improvement in design, though in this there is yet much to be learned, and here it is that the foreigner has an evident superiority, still the English manipulator performs his work superior to the foreigner; but in design we are behind the French. I was much struck by the contrast between the clearness of English and French glass. The latter have yet to work their flint glass clear before coming up to the English standard. It is in the coloured department that French superiority is most manifest, but as this has been chiefly theirs for a long time, and only recently attended to in England, the difference of tint and beauty is accounted for; the English department is superior in workmanship, the French in design and colour, and here it is that the English glass-maker should take a lesson from his neighbour, and devote more attention to these departments. I consider schools of design, with special reference to the trade, of the utmost importance, and have no doubt the English master would find a profit in amalgamation of interests with that object.

A great deal of the foreign work is blown in wooden moulds, which afterwards only requires a very slight finish; this I witnessed myself, whereas in England everything is worked and blown by hand. In articles combining use and beauty, the English department is superior to the French, but the latter in specimens of art display much taste and talent. In table services, for instance, the English are much before the French, and the English workmen show a decided superiority in the delicacy of the glass, and the smooth finish of the various articles.

We in England are making straw-stemmed wine-glasses from one ounce to one ounce and a-half, whereas the foreigners make their lightest wines about three ounces, using double the quantity of metal that the English workman does. I myself have made an antique jug ten ounces in weight, which is capable of holding an imperial quart. I have seen no French or foreign work so light as this, but in several cases the English exhibitors show greater lightness and delicacy in wine services.

As regards the quantity of work done by the glass makers in France

and England, I would wish to make a few remarks. We make ninety wine-glasses in six hours, but the Frenchman makes under a hundred in ten hours, and yet they can send their work into the English market as cheap in some things and in some a great deal cheaper, showing that in England the workmen on the whole do more work for the same amount of wages. The English masters look for immediate profit; the French with less industry pay more attention to the perfection of their workmen in design and the colouring department. In this latter we are far inferior to them, and this, I think, is owing to the neglect of the English masters in instructing their men—particularly the young—in the technicalities and practice of art in connection with the glass trade. The district of Birmingham numbers about 320 men and boys, and there is but one attends the Midland Institute out of this great centre of industry. It will take a long time, even with the best means, to bring us on a level with the French in the art of design and colouring.

The trade customs in France differ in some few particulars that are worthy of note. In France the wages of the working artisan are slightly under the English. I myself average from 3*l.* 10*s.* weekly, whereas the French have about 5*l.* the fortnight, according to their respective talents. The same may be said in respect to England, but the French live comparatively cheaper, and do not work so many hours. We work about forty-eight hours weekly; they work ten hours a-day for five days, but as they are paid once a fortnight, and then as a custom take two days' pleasure, they lose ten hours weekly, which brings down their working time to forty hours. In France the workman's pleasure is rational enjoyment, never descending to the level of drunkenness as in England. On the contrary, the days of enjoyment, far from being a loss to the trade, are a positive gain artistically, as the workmen spend several hours in the public institutions of art, where they acquire beauty as a custom of their daily life. In England, on the contrary, days of recreation are usually spent in the public-house. The cause, in my opinion, is that we have not in England public institutions open to the working man. He has no alternative but the beer-house, or a country excursion, which generally ends in the public-house in the evening. We want public patronage in matters of art. No association is strong enough to provide this for itself.

The Government in France does all this, so that the Frenchman has the advantage of the English in this, that his daily life is surrounded by associations of beauty never seen by the Englishman; hence the Frenchman's superiority in design. All the Englishman can do with the means at his disposal he has done—that is, his workmanship is superior, but he lacks the education and knowledge of classic art, which the Frenchman possesses. This, in my opinion, is at the root of all differences which exist between the glass trade of England, and that of France and the Continent generally.

TABLE AND FANCY GLASS.

By W. T. SWENE,

PRACTICAL SUPERINTENDENT OF GLASS WORKS, BIRMINGHAM.

IN this Report, I propose, for the sake of reference, to divide my subject into divisions, and parts, suggested by the various branches of the manufacture with which I have to deal, viz, 1st, purity and quality of the flint glass; 2nd, form of construction; 3rd, modes of decoration, as cutting, engraving, and etching; 4th, colour, and its applications, as in pastes, enamels, and gold; 5th, pressed glass; 6th, the revived Venetian art of glass-working, as practised by Dr. Salvati; 7th, different modes of manipulation practised in France, which vary from those in use in Great Britain. The combinations of glass with silver, and other metals, glass chandeliers exhibited, will also be referred to. I then purpose to offer some remarks upon the competition existing between our own and foreign manufacturers, to be followed by a few statistics bearing upon the rates of wages paid by our own manufacturers, and those of continental nations, with some facts illustrative of the educational status of the trade, in France, as compared with it in our own country.

PURITY OF THE FLINT METAL.

The first aim of the manufacturer of flint glass is to obtain a material so free from all colour as sometimes to be designated by the term "spring water." This object would seem to have been the one sought after by the exhibitors, and to a very large extent they may be said to have been successful in their efforts; for illustrations of the truth of this assertion, one need only refer to the beautiful samples of cut glass crystals exhibited by Mr. James Green; the massive inkstand, by Messrs. Powell; the cut and engraved water-jugs and dessert services by Mr. Dobson; or the flower-stands by Messrs. Phillips and Pearce, not to mention the exhibits of Messrs. Pellatt, Copeland, and others, in the British section. But while our reputation for purity of material has been so well sustained by the eminent firms above mentioned, still the great improvement in this important item, effected by the continental firms, cannot be disregarded; for those acquainted with the history of our trade, will remember that a very few years have elapsed since the period when the British producers held almost undisputed possession of the flint glass trade of the world, by reason of the very inferior colour of the Belgian and French makes. But the observant visitors to the French, Belgian, and Austrian courts of the present Exhibition, will have found that the goods there displayed of the

kinds usually in demand for domestic use, and in which minute differences of colour are not so readily detected, are at first sight little inferior in point of colour, and general purity, to the samples exhibited in the British section, and, except in cases where the very highest class of work is required, that they are of such a quality as to threaten the British manufacturers with a formidable amount of competition, in many markets. These remarks may be illustrated by the exhibits of the Baccarat Glass Company, E. S. Monot, and L. J. Maes, of France, and Herr Lohmeyr, of Vienna; as also by that of the Joint Stock Company of Herbatte, in the Belgian section.

But while the continental work would in the lighter kinds of goods enter into strong competition with our own, when we come to heavy work, such as richly cut services, or chandeliers, there the superiority of the British glass is at once apparent. No better example of this can be cited in illustration than is afforded by the marked difference in the colour of the massive chandeliers exhibited by Messrs Osler, in the British, and the large fountain by the Baccarat Company, in the French section. In the former case, there are all the prismatic effects obtainable by the best of material; in the latter is found a mass of darkness, which could not possibly exist in connection with really high class material.

But while acknowledging the manifest superiority of our own exhibits in this important part of the manufacture, the question still arises as to the relative advances made by the various nations exhibiting; and the truth compels one to admit that the progress made by the continental firms during the last few years has been greater than that made by the British manufacturers; who, contenting themselves by thinking they have arrived at perfection, are in some danger of being left behind by those who, only a short time since, seemed quite unable to manufacture flint glass, except of the most common description.

FORM AND CONSTRUCTION.

In considerations affecting the form or construction of an article intended for domestic use, it is the opinion of many persons of considerable position in the art world, that we are limited to a few types; and if one only sought for confirmation of that opinion, it might readily be obtained by an inspection of the glass shown in the British section, where, although by far the greater proportion of the goods there displayed are as elegant as purity of form, and simplicity of outline, can make them, yet are they indeed limited to a very few types. In illustration of this, I might point to the exhibits of Messrs. Dobson, J. Green, Copeland, and others, all of whose goods, though really of a very high classic type, yet were singularly pervaded by one spirit throughout; and might have readily been conceived to be the productions of one individual. To those who are of opinion that all new types of form are only obtainable at the expense of correct taste, a careful study of the exhibits of the French section would be most useful; for it would appear that to the firms there represented, there is no limit to types and varieties of form, and these, too, in the main, not only elegant, pure, and simple, but at the same time useful also. This was shown to a remarkable degree by the

Baccarat Company in their very large display of water sets and spirit services, as also by the exhibits of L. J. Maes and E. S. Monet.

Another remarkable feature developed in this section was the very successful manner in which those features, in which we were once so far superior, have been copied; take for instance that article so much in request, viz., a wine glass. Time was, when a well sheaved wine glass could be made only in England, when all foreign goods of this description were flatted or cut on the edges, in such a manner as to give them the appearance of having been broken and repaired; but in this section of the French and Belgian departments there are to be found wine glasses of all descriptions, with tops as well sheaved, hollow stems as well formed, and generally as well made as the best work on the English stalls. There seems but one difference, that being in the make of the feet, which are rather stronger than those of English make, and it is a moot point whether the French-made foot is not preferable to the English one, for the latter being made so thin, is constantly liable to accidents, and is not so well adapted to stand wear and tear as the former, which being not a cast foot, but something between a mule and a best-made foot, is at the same time useful and not objectionable on the score of clumsiness. Other examples might be cited, as the universal adoption of hollow instead of solid handles. This application of the hollow handle, alike to *heavy* as well as to light ware, elicited an objection from a glassblower, who thought its application unsuitable to *heavy* work, forgetting the many advantages that it possesses, in point of strength and durability, in addition to its possession of more general attractiveness.

But by far the most ornamental, and at the same time useful, example of handled work was displayed in a water-jug on the Baccarat stall, the handle of which was made of two double fine-twisted glass cords, which were threaded and turned back to form a double knot, so placed as not only to give elegance to the appearance of the jug, but at the same time so arranged as to form a thumb-piece or check, to prevent the hand from losing its grasp while in the act of pouring. But admitting all the advantages that can be obtained by the use of glass handles, it is a question worth consideration whether the material is a suitable one for handles at all. It certainly is a difficult one to treat ornamentally with any degree of success, and, at the same time, it is not any cheaper, risk and all things considered, than an electro-plated one, for instance, as very often the article destroyed through a broken handle is more costly than would be even a silver handle.

Some examples of judgment and good taste in the important matter of form were to be found in the exhibits of Herr Lobmeyr, of Vienna, whose display manifested the master hand, both in purity and variety of construction, but some of whose works were so largely made up of ornaments as to lead one to conclude that he combines with the glassworker's art that also of the metal worker or silversmith, the consideration of which does not come within my province.

Some good examples of the extent to which large masses of glass can be made to assume elegant forms are to be found in the colossal coloured vases exhibited by Herrs. Hegenbarth, Ulrich, and Hofmann in the

Austrian Courts, and by the Count de Schaffgotsch in the Prussian Section.

There are to be found in the French Court some examples of what may be termed architectural construction that suggest the inquiry as to whether glass is a suitable material for works which would appear to require a more solid and durable material, and one possessing more decided structural features. I may illustrate my meaning by quoting a remark that was made in my hearing by an intelligent individual, who exclaimed, while looking at the large fountain exhibited by the Baccarat Company, that "some people treated glass as if it were cast iron," and I am disposed to think that the expression was not altogether without truth.

Again, it is very questionable whether the material is of the right nature for making up into tea sets, as such ware is generally supposed to be capable of bearing great heat, which is not the case with glass. These tea sets were to be found in most of the stalls of the French Courts, but not in the English, which seemed to be free from any such misapplications, and in which the nature of the material had been generally well considered, and incongruities avoided.

DECORATIVE CUTTING.

Of all the modes of decoration applied to glass, perhaps this is the most difficult to manage successfully, as the object of cutting should be to develop the naturally brilliant qualities of the material, and at the same time the mode of decoration must be subservient to, and harmonious with, the form of the article decorated. This latter point is too often lost sight of in the aim at brilliancy of effect, and the result is, that the forms which were good in the plain article become distorted and cut out of shape by the want of harmony between the form of the article and the leading lines of the cutting. That these difficulties have been encountered, and that a successful effort has been made to meet them, is evident from the various exhibits in the English Section, where, although cut glass is not so extensively represented as in the engraved and lighter work, we have some excellent specimens of cutting, as illustrated by the very remarkable services shown by Messrs. H. Greene, J. Green, and Dobson, all of which were founded upon geometrical principles, and in the cutting of which great care had been taken in the correct division of the spaces and the general finishing of the parts. The only danger to be avoided seemed to be that of over-cutting or overcrowding. An example of this was to be found in the costly diamond pattern water-jug and service exhibited by Mr. Dobson, in which the work was so minute as at a little distance to have almost the same effect as "frosting," an effect which can be obtained at a very trifling cost.

There was also in the English Section a great absence of light cutting, as combined with, or in support of, engraving. Of this style of work some good examples were shown in the French Courts, notably by the Baccarat Company. This is a style of work that could be made useful, being capable of considerable artistic treatment, and not so liable to interfere with the forms as is the bold and massive work. The cutting

of the work displayed in the French Section was generally deficient in that decision and force which is the one great feature of the English work, the edges and mitres being in most cases polished away, added to which some of the worst faults of the style of work once in use in England have been copied. I allude to the want of adaptation in the mode of cutting to the form which is said to be decorated, but which in reality is spoiled. An example of this was to be found in some decanters exhibited by the Baccarat Company, the bodies of which, being elliptical in form, had some heavy, deep bands cut out of the shoulders, and were otherwise so cut up as to destroy at once all the beauty of form which they possessed when they left the hands of the glassblower. This fault was of rather frequent occurrence in the imitations of the English style of work, as found in the exhibits of the French section, and is a matter of some surprise, considering the amount of art education brought to bear upon the industry of that nation.

But while admitting these errors in the style of cutting as displayed in some of their productions, still it is quite evident that in this branch of the trade their progress is so considerable as to promise ere long to place them in an equal position with the best English manufacturers, and, in fact, where they have adhered to their own styles of cutting, there it is quite evident they are at home. This position may be illustrated by the beautifully-cut spirit-boxes, in various colours, exhibited in this section, as also by some large dishes shown by the St. Louis Glass Company, which were perhaps the best specimens of cutting in the French Court, the bottoms being cut upon an excellent geometrical basis, and the sides in rich leafage work, tied together by a rope-like border. Some good specimens of cutting are also exhibited by Mons. Monot in this section.

In the Austrian and Prussian sections were to be found some good specimens of cutting on the large coated or coloured vases exhibited by Hofmann in the latter and Ulrich in the former, all of which are founded upon a geometrical basis, and are carefully worked out.

There are some incongruities in this section, as the application of frosting to wine glasses, and other drinking vessels, by the Joint Stock Company of Herbatte, in the Belgian section, as also by the imitation of *moiré-antique* in the cutting of some articles exhibited by the Baccarat Company. In the former case, the ready manner in which they would soil, and the consequent risk of breakage arising from the necessity of constant washing with warm water, would prevent the sale of them to anyone having a desire for cleanliness and economy; and, in the latter case, if one could imagine a drinking vessel made of silk, they might find some excuse for the adoption of an imitation thereof for a similar purpose.

In concluding this part of my subject I would desire to point to this one fact—viz., that the style of cutting most generally adopted by the Continental workers is more ornamental and more striking in its originality than is the English work, thus again furnishing a practical development of the advantages attendant upon the combination of art teaching with a practical knowledge of its application.

ENGRAVING.

This mode of decoration is so extensively, and at the same time so well, represented as to preclude the attempt at a minute description thereof.

In the higher branches of this department there can be no question but that the first place must be assigned to the English exhibitors, some of whose displays contain such examples of art-workmanship as perhaps were never before seen. One need only refer to the water-jug exhibited by Mr. Dobson, engraved in the cinque-cento style of ornament, the general arrangement and execution of which can scarcely be surpassed; as also a jug of similar form, but still more elaborately ornamented, by Messrs. Phillips and Pearce. Added to these are many examples of Greek, Italian, and mediæval services, by Mr. Dobson, which are all as beautiful as simplicity and a rigid adherence to the true principles of ornament can make them; as are also the excellent examples of Italian ornament shown by Mr. Pellatt, whose collection, though small, is of the highest order. Mr. Copeland's display contains some excellent examples of classic ornament, which have the merit of simplicity added to excellence of workmanship. His example in this respect is worthy of imitation, as it is to be feared that there exists a tendency to over-decoration, in which case, owing to the want of sufficient plain bright surfaces, as a counterbalancing ground or support for the work, much of the labour bestowed is lost, and the general effect rendered less pleasing.

It would appear that, to a great extent, the study of the various forms to be met with in the floral world, and their application to art-workmanship, has been forgotten, in the presence of the great demand for historic art; at least, there are but few examples of conventionalized floral decoration to be met with in the exhibits of the British section. These consist of some water-sets, engraved with the ivy-plant, arranged generally in festoons, and both skilfully designed and well executed in each case. This would appear to have been a popular subject, as it is to be found in several exhibits, but chiefly in those of the metropolitan firms. It is worthy of consideration with our art-workmen in glass whether this is not a field of art worthy of cultivation, possessing, as it does, unlimited sources of instruction in the variety of its forms, the beauty of its arrangements, and its adaptation to the varied circumstances of its existence.

The engraved work exhibited by the French and other continental firms is less noticeable for the progress made in excellence of execution than for the altered style of its designs, as compared with those previously shown. Formerly the staple subjects were forest scenery, combined with representations of animal forms, and with comparatively little conventional ornament. Now we have the whole of the historic and conventional styles most extensively represented. This change was most forcibly shown by the varied display of the Baccarat Company, as also by those of E. Monot and the St. Louis Company, in all of which the designs were most carefully considered, the spaces well balanced, and overcrowding avoided. In many cases the outlines were most truth-

fully drawn, delicacy of treatment and subtlety of handling being shown to a remarkable degree in some of the dessert services exhibited in the French section, and generally in the lighter kind of work exhibited by the Baccarat Company; but in the bolder and broader style there was an apparent want of that vigour, decision, and clearness of form strikingly exemplified in the works produced by English artists. It may probably be accounted for by the fact that most of the goods exhibited in this section were of what may be called the higher order of commercial goods, while the works shewn in the British section were exhibited as examples of high art, or as specimens of skilled workmanship.

It is to be regretted that a display was not made of ordinary work in the British section, as I think, from observation, that it would compare favourably with work of the same class made by the continental firms which was generally engraved in a careless and an indifferent manner. In illustration of this I may refer to the untruthful mode in which they engrave the Greek fret or labyrinth, the spaces being unequally divided the lines anything but parallel, and the angles or mitres a long way from true square. The only point in which the British artist seems to be in arrear in this the lower branch of the engraved trade is that most important one of art-knowledge, for if the continental workman is not so careful in execution as the English, he is more so in the selection of the style or character of the work with which he decorates the goods of ordinary demand. To this truth the articles to be seen in the immense stores of the Baccarat Company, or in those of the St. Louis Glass Company, bear ample testimony, as would also the goods exposed for sale in the shop windows of Paris.

The engraving in the Austrian court, while presenting everywhere the influence of art education as regards design and arrangement, was, in point of execution, if anything, generally inferior to that of French manufacture, the only noteworthy examples being those of Herr Lobmeyr, of Vienna, whose Greek and mediæval services were the best examples of engraving to be found in this section, being well arranged, effective, and marked with that simplicity of character which is indicative of good judgment and of correct taste, but, at the same time, deficient in vigour and decision of execution.

In concluding these remarks on engraving, I would say that the English manufacturer cannot here, with safety, sit with folded arms, as there are undoubted marks of a greater relative progress in some of the higher branches of the art on the part of continental workers than can be found on that of the British producer. One thing is certain, that the knowledge of art they possess is being applied to and rendered most valuable in assisting them to adapt their work to markets where British manufacture once held undisputed possession.

ETCHING.

This mode of decoration is not extensively represented, either in the English or the continental sections.

The position of the competing parties in this department is about equal in point of execution, but as specimens of design or arrangement

there can be but one opinion as to the superiority of the French productions.

The best example in the English section is shown by Mr. Copeland, whose Greek dessert service is simple in arrangement, yet as effective as it can be made by this process. The same firm has a service decorated in the same manner, with a crest, but as this process cannot go beyond surface work, and, therefore, is deficient in relief, it is very questionable if the application is a correct one as applied to armorial bearings, which usually require the introduction of some amount of shadow.

The productions in this branch by the continental firms are chiefly confined to the Baccarat Company, who have some remarkable specimens of etching. Amongst others is a dessert service, in the Greek style, which is not only well designed and executed, but also noticeable as being an example of what may be termed dead etching. This is a step in advance of the method as hitherto practised, in which the outlines were etched out and left bright or transparent, the ground being filled in by the engraver; but in this case the design is, by some new chemical application, etched out in a dead or opaque outline, the article being again subjected to a similar process in order that the ground may be filled in, thus dispensing altogether with the aid of the engraver. This method is, I believe, also practised in England, but it would appear that to the Baccarat Company belongs the merit of having first discovered it. Messrs. Cifuentes, in the Spanish court, have an etched service, the ground of which is deadened or rendered opaque by acid, and the pattern left bright; it is in the Greek style, and is bold and effective, but having so much frosted work is liable to soil, and would require constant washing, which would entail more than ordinary risk.

This mode of decorating glass would appear to be on the decline, doubtless owing to its limited field of application. The only instances in which it can be employed are those where surface ornament alone is required, the cost, too, being comparatively but little below that of engraving.

APPLICATION OF COLOUR.

Colour may be applied to glass in various ways, and in some cases in such a manner as to deprive the material of its characteristic features, and make it questionable whether it should be treated as glass or as a superior kind of china. Here a wide field is open for the application of gold and enamel colours, and this department is most worthily represented in the Austrian court, some of the productions of Herr Hegenbarth being everything that can be desired in design and arrangement of colour.

The application of colour in coated or cased goods would seem to partake more of the true nature of glass. Some very striking and artistic effects are obtained by the cutting through of the upper coats, so as to leave the lower colours visible, as well as by the application of gold and enamel colours in assisting the outlines of the pattern.

But the most successful application of colour was to be found in the dark green transparent glass exhibited in various forms, as water sets

and claret jugs, &c., and painted with enamel colours. In these cases the rich green shade formed a very suitable ground for and harmonized well with the brighter colours with which it was painted, sometimes in heraldic and at other times in geometrical devices, but always arranged correctly and with simplicity. Of this class was an oval claret-jug, exhibited by Mons. J. Maes, in the French court, and some water sets, by Herr Ulrich, in the Austrian court.

The most modern application of colour is in the form of gems or pastes, attached to articles made of flint glass, as illustrated by the service of Messrs. Powell. This practice is open to some objections. In the first place, it materially detracts from the purity of the colour of the flint ground or base to which the pastes are attached. Again, flint glass is too transparent to form a ground-work sufficiently solid in appearance to support the colours, which are varied, and which possess no harmony. The same objections would also apply to the application of gold and enamel colours to flint goods, as in the case of the services exhibited by Herr Lobmeyr in the Austrian, and Messrs. Cifuentes in the Spanish court, as well as to the enamel ornaments on the flint goods exhibited by the Imperial Glass Company, in the Russian court. These gems and enamels would be more correctly applied to articles made of coloured metal, as the dark green before mentioned, or ruby, in which cases the patti-coloured gems would be well supported, while the plain ground would be enriched by the various hues of the gems. In this department, with the exception of the gem or paste work, England was unrepresented, but the competition lay between the French and Austrian makers. The latter occupied by far the higher position, having devoted their almost exclusive attention to it, and developed their resources to such an extent as to ensure a most successful display.

PRESSED GLASS.

This was not largely represented, but the examples sent were usually of a fair average quality. Of new styles or modes of manipulation there were none, and out of the three exhibits in this class that were to be found in the continental courts two, I believe, from their general appearance and colour, to have been composed of work made in Great Britain. I allude to the pressed work displayed in the stalls of Messrs. Cifuentes, in the Spanish, and P. Regout, in the Dutch court.

The other pressed work exhibited was by Messrs. Lyon and Co., of America, the colour of which was inferior, and the execution, or pressing, not above the average.

It is to be regretted that our English makers of this kind of work were conspicuous by their absence, as they certainly would have been able to furnish a display worthy of some recognition at the hands of the jurors.

VENETIAN GLASS.

This, as is well known, is a revival of the ancient art of constructive decoration as applied to glass, so largely practised by the Venetians. This department is most extensively represented by Dr. Salvati, of

Venice and London, whose display consists of an infinite variety of objects for domestic use.

In addition to the works of Dr. Salviati, there are to be found spread throughout the British court examples of a similar mode of treatment, sometimes termed Venetian, but which differs from the real Venetian glass in these important respects—viz., that the one is made of bright material, while the other is comparatively dim or cloudy in colour; and again, the mode of production is different, the true Venetian being, to a great extent, the production of lamp workers, while the English work is chiefly made by the ordinary glassblowers, and direct from the pot, in the usual manner. But in this respect there are, of course, exceptions, as in the case of wine glasses, for instance, the main portions of which articles are made in the same manner in both cases.

The combinations of various shades and colours, as represented by the enterprising Dr. Salviati, are, in many instances, most successful, and are, perhaps, the first steps towards the solution of the problem as to how far and in what direction colour should be applied to the manufacture of articles intended for domestic purposes.

In considering the mode of construction adopted in this manufacture, it would be well to inquire how far it is adapted to the purposes for which it is intended.

It is a great point in domestic economy that all articles purchased shall possess a reasonable amount of durability, in which respect Venetian glass, by reason of its construction, would to a great extent seem to be deficient; for instance, there are to be found in this display many examples of drinking vessels (which require cleaning every time they are used), with stems so elaborate as to require the most tender care in using, lest they should be damaged, and the details of which would run great risk of being injured by entanglement, even with the folds that exist in the lace of a lady's dress. How, then, could these fragile creations withstand the necessary risk entailed in cleaning, an operation which is most frequently accompanied with some amount of danger, even to goods possessing a simple outline, and free from scrolls or other details. Another favourite mode of treatment is that of affixing to otherwise plain forms some projecting pieces of glass, which are sometimes ribbed, and at other times pointed in imitation of the strawberry, &c. This mode of decoration would appear to have one objection,—viz., that of its being likely to prove detrimental to the preservation of the pure and simple outlines, which possess in themselves all the elements of true beauty of form.

A remarkable feature in the productions of this section was the want of precision or truth in some of the forms, which had the appearance of being partially deformed, either through want of care in blowing, or through being slightly melted in the annealing process. But this would appear to be one of its characteristics, as we find it asserted by the admirers of this art, that a correctness and precision of outline is fatal to freedom of handling, and also that neatness of execution is opposed to vigorous and good design. If this be true, then the whole art-world must have made a great mistake in their adoption and love of Greek and other historic forms, some of which are so mathematically correct in out-

line as to be capable of construction by the application of a few geometrical principles ; and if this reasoning be correct, it would appear that while truth is recognized, and required, as a *principle* in logic and every other science, it may be dispensed with in the art of glass-blowing.

But while noticing these apparent flights of fancy, one cannot but feel that into many of the forms, there is imported a love of true art, which striving to give itself expression, is like the tiny bud, which will gradually grow in life and vigour until it unfolds itself as the delicately tinted and beautifully formed flower. Would that our own workmen had more of this love for subtlety and grace of form, more ideality and less prejudice ; then, and not till then, may we expect them to realize the extent of the capabilities and resources which their art possesses.

METHODS OF MANIPULATION.

My opportunities for observation on this point were but few, owing to the impossibility of gaining access to any manufactory. The only one open was the small model house in the park attached to the Exhibition.

The use of wood moulds is a great advantage to the continental makers, enabling them to produce forms which would require considerable skill to make by hand at a comparatively small cost, and ensuring correctness and uniformity of shape. These moulds are to be obtained at a very trifling cost, the price of turning being, as a foreign workman informed me, but very small indeed. Another advantage obtained by the use of them is, that the surface of the glass comes out from them as clear as if it was hand made, thus avoiding the expensive process of cutting or polishing all over. As an illustration, I may mention two large oval dishes exhibited by M. E. Monot, of Paris, a portion of the surface of which was left perfectly plain, and had all the clearness and brilliancy of a fire-polished article. Had these been made in England they would have each cost a considerable sum in polishing the plain surface, in order to effect the removal of the marks left in blowing from iron instead of from wood moulds. I am aware that they have been tried in England, but owing to their rapid destruction by the heat, they have been abandoned ; but I was told that a mould of French make would suffice for the blowing of fifty good articles from it before it was considered useless, and then it could be turned again for a similar article of a larger size. In visiting the model glass house I observed that iron templates, with corresponding patterns of the same material, were in constant use, and each template and pattern seemed to be numbered. This system I believe to have advantages, ensuring correctness and uniformity of size and shape ; and I have also been told by a first-class English workman (one of the very few who have adopted the use of them) that they also enable him to make more, and not, as some think, less, in a given time. In this model glass house each servitor was furnished with a template corresponding to his part of the work (they were then making goblet ales), and the servitor had a template with which he gauged the bowl, before casting on the bit for the "maveese," thus ensuring to the workman a bowl of the correct size and shape, to begin with ; then the workman had another template corresponding to the whole outline of the article when

finished, which he applied from time to time as required. Another point but an economical one, was that the various measurements of the article were marked or "notched" on the opposite side of the template, thus avoiding the use of a second implement as a measure stick. But a more important arrangement consisted in having one more boy to a set than is usual in England, although I believe it is adopted in some cases. This brings the number, including the "taker in," up to five in a set, and is advantageous in this way: first, that the workman has some one constantly in attendance upon him, and so has not to lose time while waiting for the cleaning off of irons, taking in, and other matters, which must of necessity occupy the boy's time; and again, it provides a preliminary training for the boy who has to wait upon the workman previous to his commencing work as a foot-blower, and this prepares the boy to commence real work with some knowledge of what he has to do. This training I believe to be requisite, because the present system of having but one boy to each set of workmen throws so much of what may be called unproductive labour upon him, as to leave him no time for observation; for, if we consider that a boy has three men to wait upon, irons to clean, work to take in, and any quantity of running hither and thither, we must see that he has no time for attending to the principles or modes of work; but if, after he has done this work for a while, he could step up into an assistant boy's place, leaving another to take the lower place, then he would be in a better position when required to step in and render assistance as a foot blower, and he would eventually make a better workman.

CHANDELIERS AND MOUNTED GLASS.

In addition to the general display of table glass exhibited, there was a large quantity of glass work displayed for other purposes, as chandeliers, and work combined with silver and other metals: we shall consider the chandeliers first.

There can be no doubt but that the first place in this department must be given to the English section taken as a whole; for, while the chandeliers of Messrs. Osler vie in simplicity of arrangement and excellence of proportion with anything that is to be found in the Continental courts, the colour and quality of the work exhibited in the whole of the chandeliers of British make, are far superior to those of the French and other manufacturers.

But, while speaking thus of the English chandeliers, we must not close our eyes to some existing defects; for instance, the constructions of Messrs. Defries are too architectural, and display a want of regard to the nature of the material of which they are formed; while some of the works in this department were too elaborate and too profuse in their decorations, although Messrs. Dobson have some really tasteful and simple examples in their display, which are well proportioned, pleasing in appearance, easy to clean, and also moderate in price, being suitable for general use.

The chandelier by Messrs. Phillips and Pearce is a really elegant example of the adaptation of what is called the "Venetian" style; the

proportions are good, the arrangements simple, the extravagant flights of fancy observable in other productions of this style are avoided, and the general appearance is complete and pleasing.

In the Baccarat display of chandeliers were to be found some good examples of the combination of coloured parts. Thus, a pair of ruby-coated girandoles, with festoons of green, ruby, and flint spangles, were worthy of notice; the general proportions of the whole of their chandeliers were other evidences of the influence of the art-teaching received by their artisans.

The chandeliers of Prussia and Austria were chiefly composed of ormolu, very skilfully clothed with glass drops or ornaments, which were noteworthy as great improvements upon the old "angle, spear-head, pillar, and Albert" drops which have been so long in use, and the employment of which has disfigured many a well-constructed work.

We come now to the glass used in conjunction with silver and other fittings, and exhibited by the silversmiths generally throughout the Exhibition; and it would appear that by far the larger portion was of British make, and generally good in quality. This English glass was to be found in the stalls of British and Continental firms alike, a large proportion being made by two firms established in Birmingham.

In this section it was to be found that the glass was generally suitable in design to the metal work with which it was combined, which cannot be said of all the applications that one sees of this sort; for instance, we have seen a glass bowl of the most severe Greek school, mounted upon an epergne stand, composed of an oak-tree, with a lion, a panther, and a tiger on the base. These misapplications could not be found at all in the Continental courts, the combinations there being standard examples in this respect, though some of the Continental-made glass exhibited by some of the French silversmiths was much inferior to the English work similarly combined.

INSTANCES OF COMPETITION.

This is perhaps the most important branch of the subject, commercially speaking; but as the prices quoted in the Exhibition were generally "retail," but little information could be gained upon this point.

But there can be no doubt that the extent of the competition existing between the Continental and our own manufacturers, will be found to show a decided advance in favour of the former. This view is supported by M. Bontemps, who asserts that since 1862, "the amount of flint-glass annually produced in France has risen from 9,000,000 of francs to 12,000,000 of francs," an increase of one-third in four years, the larger proportion of which has gone to markets formerly supplied by Great Britain.

Among the few articles of which I was able to obtain the wholesale prices, I may mention some decanters and wine-glasses *en suite*, all very well made, of good colour, and well decorated, the prices of which were thirty-five per cent. lower than they could be obtained for in England, and I have reason to believe that this rule may be applied to most of their productions. This view was confirmed by a visit paid to the immense

stores of the Baccarat Company, where I found goods suitable for all purposes and for all markets, well made, of good fair metal, tastefully decorated, and at prices at least as low as before stated. This firm alone employs 3,000 persons, a fact which has its own moral.

Again, I know that not only are the Continental makers supplying our foreign markets, but they are also competing with our own makers in the home trade, and that successfully.

These few facts should be sufficient to arouse the trade to an inquiry as to the causes operating so injuriously upon our manufacture, which, unless some steps are taken, seems not unlikely to fall into other hands.

WAGES AND NUMBERS EMPLOYED.

The only information accessible under this head was to be obtained from the work published under the auspices of the Chamber of Commerce of Paris, and dated so far back as 1860, since which time the numbers employed have largely increased. Subjoined are a few extracts from the book referred to, which includes the manufactories in the vicinity of Paris alone, without reference to other parts of the Kingdom.

BLOWERS EMPLOYED.

Men . . .	649.	Women . . .	50.
Boys . . .	204.	Girls . . .	30.

But M. Bontemps informs us that the number of boys employed at the present time is nearly equal to that of men, so that clearly the increase has been to a great extent in juvenile labour.

The wages have, since 1860, risen 10 per cent. Subjoined are a few particulars of the rates then paid, with the number of persons receiving the same.

45	at 3 francs per day.
83	" 4 " "
177	" 5 " "
85	" 6 " "
70	" 9 " "
9	" 10 " "

Thus the average wage at the present time would seem to be (taking 5½ francs as the average in 1860, and adding the 10 per cent. advance) about 25s. per week.

Owing to the want of well-authenticated information as to our own rates of wages at the present time, it is difficult to give more than an approximate average, which I have endeavoured to obtain and subjoin as below :—

Castor-hole Workmen,	30s. to 50s. per week,	average 40s.	
"	Servitors, 20s. to 25s.	"	22s. 6d.
"	Foot Blowers, 14s. to 18s.	"	16s.
Bye-place Workmen,	28s. to 35s.	"	31s. 6d.
"	Servitors, 18s. to 24s.	"	21s.
"	Foot Blowers, 13s. to 16s.	"	14s. 6d.

This table shows that we have workmen earning as much as 50s. per

week, but these consist of but a few men employed in making these work, while the men employed in smaller work, and the assistant servitors and foot blowers, can only earn what may be considered comparatively low sums. Thus the following table, including the men and servitors of one set of each, castor-hole and bye-place, what may be considered as an average :—

	£	s.	d.	
1 Workman Castor-hole,	2	0	0	per week's work.
1 Servitor "	1	2	6	" "
1 Workman Bye-place,	1	11	6	" "
1 Servitor "	1	1	0	" "
<hr/>				
Total 4 men.	Total £5	15	0	" "

This, if divided by 4, would give an average of 28s. 9d. per week, the foot blower being frequently an apprentice, is not included in the calculation, which is based on the wages of the workmen and servitors who are always men supposed to be earning full wages.

If, as it appears probable, the increase in the number of persons employed in the glass trade of France has been in the junior branches of the trade, it becomes an important inquiry as to what are the wages paid in this department, more especially as many of the goods can be made without the aid of skilled labour, in consequence of the application of the wood mould before mentioned. The wages paid to boys in 1864, which are also subject to an increase of 10 per cent., are as follows :—

	Francs.	Cents.	
12 out of 204 received 0		75	per day.
49 " "	1	0	"
58 " "	1	25	"
34 " "	1	50	"
6 " "	1	75	"
12 " "	2	0	"

This gives an average of one franc and a quarter per day, which is at 5 days per week 6s. 0½d. per week, while the wages of boys in Great Britain are from 4s. to 5s. per week.

An important consideration in this branch of our subject is the number of hours that are considered to make a week's work : thus in Great Britain the week's work can always be made in six turns, of six hours each in duration (the rest being paid for as overtime), commencing on Monday morning and working day and night, six hours on and six hours off, giving a total of thirty-six hours, while in France, if I am correctly informed, the week consists of five days' work of twelve hours each, with two hours allowed for meals, giving a total of fifty hours : this of course makes a sensible difference in the relative positions of the English and French manufacturer.

I now proceed to consider the wages paid to decorators, as cutters, engravers, painters, &c., which, as far as France is concerned, are obtained from the same sources as those already given, and refer to the vicinity of Paris alone.

DECORATORS—NUMBERS EMPLOYED IN 1860.

Men, 536 ; Boys, 48 ; Women, 95. These numbers have since largely increased. The wages paid to men in 1860 were as below :—

	Francs.	Cents.	
48 received	3		□ per day.
44 "	3	50	"
94 "	4	0	"
130 "	5	0	"
67 "	6	0	"
10 "	7	50	"
18 "	8	0	"
24 "	10	0	"
3 "	12	0	"

This gives an average of five francs and sixty centimes per day, which, with the addition of ten per cent. advance which has since taken place, will be about 31s. per week. The average wages paid in this department in England are about the same, from 30s. to 32s. per week: the hours of labour being about the same in the two countries.

The wages paid to women in this department in 1860 were as follows :—

	Francs.	Cents.	
15 received	1	25	per day.
7 "	1	50	"
21 "	1	75	"
40 "	2	0	"
4 "	3	0	"

This gives an average of 1½ franc per day in 1860, or with the addition of the 10 per cent. increase, an average of 9s. 6d. per week for each woman employed.

Of the forty-eight boys employed in this department, forty-five were apprentices, of which twenty-seven received no salary or wages, but were provided with food and lodgings.

EDUCATION.

It is very generally known that the educational status of the continental nations is much higher than in England, but still I was hardly prepared to find that it had made so much progress in a trade that is of all others the most difficult to impress with the sense of the value of education. Here are a few figures. Of the 536 men employed as decorators, 517 could (in 1860) read and write, of the 95 women 92, and of the 45 apprentices 42 were able to do so. The proportion of glass-blowers that could do so was, I believe, about the same, while from well-authenticated sources I am informed that in England the proportion of men that could do so is not more than one-half in each branch of the trade, while the boys are not above 10 per cent. in advance of that. It is a matter for congratulation that the Trade Society of the flint glass-blowers has recently recognised the great value of education, and has been, I believe, the first amongst the Trade Societies to use its powerful organization

for the furtherance of an object in which the future interests of the trade both to employer and employed are so deeply concerned, and in which it is to be hoped both parties will sink all differences in order to put an end to what has been for so long a blot and a scandal to the trade.

CONCLUDING REMARKS.

In this imperfect attempt at describing the articles exhibited, I have endeavoured to deal with my subject in a fair and impartial manner, pointing out what appeared to me to be the excellences, the faults, and the failings of the glass of the countries exhibiting, with the humble desire that it may be of some little service to my fellow-workmen, and to the glass trade at large.

But I cannot refrain from *once* more pointing out the necessity that exists for art-teaching, for we not only want skilled designers, but we want in a greater degree a knowledge of art on the part of our workmen. For how can a glass-blower, who cannot draw the most simple curve, be expected to have a correct eye for form, and true judgment in the proportions of the articles he is called upon to make? Or the glass-cutter similarly situated, how can he be expected to combine his decorations so as to improve and not to spoil the forms put into his hands? In the most important point we may readily receive a great lesson from the Continental workers, who, while improving in a great degree in the quality and execution of their work, never lose sight of the importance of combining industrial skill with the application of art-knowledge.

TABLE AND FANCY GLASS.

By T. J. WILKINSON,

PRACTICAL GLASS WORKER, BIRMINGHAM.

IN presenting this Report to you, I do so with a certain amount of diffidence. In the first place, because I have not had the honour of writing a Report before upon any subject ; and secondly, that I was compelled to begin work at the early age of seven years. In the glass trade a boy is shut out from the opportunity of gaining education after he has begun work, by the peculiar time required to follow his employment, unless it is education gained in the Sunday-school ; consequently my stock of learning is but small, and not calculated to enable me to write a very good Report. In making these few remarks my object is simply this, to request those who read and those who hear it read to look kindly upon all deficiencies, while this may be relied upon, that I shall here state only my own honest convictions without prejudice of any kind. The better way to place matters before you will be to divide the subject into two parts : *First*, My Visit to the Exhibition, and what I saw there. *Secondly*, My Visit to a Manufactory, with what few facts I obtained in reference to the trade.

In the first place, then, glass is not a modern material ; much of its present perfection is attributable to the gradual improvements made by chemical science of late years in its manufacture, more especially in the beauty of colour or tone of flint glass. On my first visit to the Exhibition I passed down the Rue de Paris, intending to go through the Foreign Department before looking at the English, and my first sight of glass was the French—two large rooms of specimens. The great variety of colour and ornamentation, the good arrangement of the articles, plenty of light, combined with the mass of goods displayed, all united to give them a very effective appearance, that was in a measure calculated to strike the ordinary observer as something wonderful and grand, and looked at as a show, it was without any doubt a splendid sight. But as my mission was to observe the kind of workmanship that produced the effect, I at once commenced making examination of the goods, and as this report cannot possibly extend to anything like detail of articles on the stalls, the remarks will refer to the glass made in the country named. The flint goods were principally those used for table wares, &c. There were some light wines (or wine glasses) worthy of notice for the lightness of material, but they were much too marked, and the same fault more or less prevailed all through the foreign table glass, while the colour of the flint is far inferior to the English. The best class of table

work I saw in the French Department, is on the stall of Baccarat ; there is also a large fountain eighteen or twenty feet high, that shows up the quality of their flint glass more than anything else compared with the same class of goods made in England ; say, for the sake of example, Messrs. Osiers' works of the same class (and I believe the fountain is only a copy of some of their works). There is an old saying about comparisons being odious, and in this case it really is so, for the firm of Baccarat. The fountain, as is nearly all the foreign flint metal, is devoid of all colour but a miserable brackish hue ; whereas the English make has all the prismatic colours of the rainbow, and there is as much difference between the beauty and brilliancy of the sun's light and an ordinary gas light as there is in comparison of the metal used by the two firms. Messrs. Osiers' glass has a brilliancy that almost outvies the glitter of the diamond, and it is far beyond my ability to describe the beauty and splendour of its appearance. The fountain of Baccarat is colourless, dead and devoid of life or animation ; look at it as you may, you cannot get one ray of light or colour out of it ; not so their vases and coloured work, for there are some very fine vases and beautiful caskets made of eased work, and cut up to show both colours. The fountain, like the great bulk of the elegant-shaped vases, dishes, caskets, &c., has been produced from moulds. Thus the shapes are made without the use of glass-maker's tools, and become by this a mere mechanical process, whereas similar goods of the English make are turned out by the glass-maker, with his what ought to be called moulding tools and manipulative ability, and so in goods of this sort there cannot be any comparison as regards the abilities of the workman, for on the one side the mould makes the shape, and on the other the workman shapes it with his tools and otherwise unassisted ability. In looking over the other foreign glass I found that as regards the general run of flint goods, both in the material and workmanship, they were far behind the English manufacturers and workmen. The Bohemian and Hungarian glass supported the old traditions of their country in the many fine specimens of coloured vases, &c. Prussia has a few fine specimens of ornamental glass, but like some of the French they try to make glass look like china with so much painting, &c. Russia displays a few specimens of coloured work ornamented with gold that are effective. Spain has a very indifferent show of glass ; the potterns of some of their pressed goods were used in England twenty-five years ago.

Italian glass is well represented by the houses who exhibit. The show of threaded work is very good, and well worth looking at. The various articles made of spun glass are excellent, such as baskets, flowers, &c., and at first sight they look like shining silk. The greatest display is made by Dr. Salviati, of Venice, said to be the reviver of the ancient art of glass-blowing ; but in this the term is wrong. Glass-blowing proper is the kind of work made upon hollow tubes, and shaped by the ordinary glass-maker's tools, and not, as in this instance, of Dr. Salviati's work. The mosaics do not belong to the glass-blower's art ; nor does the greater portion of the twisted and filigree work, because it is made at an oil lamp, and united to the blown work (if there is any attached) in the glass works. The works here displayed are as odd-looking and as grotesque in their appearance as we should consider any

number of men who thought fit to dress themselves in the habiliments of the middle ages ; that being the era the glass is supposed to be a copy of. All very well to put in the studio, or on the sideboard of the wealthy, but for aught else it is entirely useless. These imitations of old-fashioned goods and colours in glass no doubt are very difficult, but are they useful ? In my humble opinion, what the world now requires, and always will require, is progress in trade, so as to provide useful and ornamental articles, combined with reasonable prices, within the reach of the greatest number of purchasers.

The mosaics are a different matter, and need no further remarks than this ; the only part that is difficult, or requires skill, is the mixing of the materials for making the glass, and inlaying the slabs that form the picture or pattern required.

The American glass is poor in quantity (a kind of *mulum in parvo*) ; contains useful and general selling goods, but all pressed work. They are well finished articles, and a fair coloured metal. The only article they excel the English in is the light-pressed wine glass, with a fluted leg and bowl ; and that is owing principally to the manner they fire-polish them. The Americans feed their small furnaces (that they use for fire-polishing the work in) with resin, coal tar, sediments of paraffine and other oils ; and the fusing power of these furnaces is quicker than our ordinary coal fires are capable of. The other goods in this department are not superior, if equal, to plenty made in England.

Now we come to the British portion of the exhibition ; and amongst those who have the finest display in this department are Messrs. Osler, Gardner, Green, Dobson, Phillips and Pearce, also Millar, of Edinburgh. Let an observant mind stand in the midst of this display, and look at Gardner's colossal chandelier, at Green's brilliant service of splendid flint metal, cut in diamonds, or Powell's magnificent show of coloured and jewelled glass, or the wonderful engraving on Phillips and Pearce's work, or Millar's stalls, also the beautiful specimens on Dobson's, and other stalls, then look into the workmanship, he will find it all hand-made work ; and after making a careful examination, let some friend blindfold him and lead him to the greatest display of foreign glass, that is the French, St. Louis, Baccarat, and others, tell him there, fresh as he is from the English department, to open his eyes and compare notes and make comparisons, put the chandeliers from Gardner's and other English stalls alongside the fountain of Baccarat and their chandeliers, Green and others' richly cut goods, by the side of their elegantly painted vases, and so on with the other goods, and then ask himself the question for what were the gold medals given ? and if he conclude they were given intentionally for the best glass, he then must decide that the commission had made a great blunder, inasmuch as they had awarded them to the artist and decorator of glass, instead of to the glass-making and glass-blowing artist ; for I venture to say that any competent person would say (if he had the ability to judge) that the British regular blown glass is far superior in excellence of workmanship, and beauty of material, to any other glass exhibited. I only express my belief, when I say that the foreign is good in accordance with the ways and fashions they have of working it in their own country. But in comparison with the English

blown work, as a rule, they are far behind us. They excel us in their beautiful threaded work, also in their elegantly painted vases; but does ornamentation in gold and colours belong to glass-making proper? Still there are well marked and intelligible features that distinguish the articles made on the Continent from those made in England, and an examination will prove that England maintains her supremacy in the industry of glass-blowing.

There is one peculiarity I forgot to mention. I noticed in the globes and glasses for lamps, &c., that only about one shape prevailed. If you get a melon and a pear, cut them into various depths, and vary the size of opening, you get all the patterns of the lamp glasses used in France and on the Continent.

When leaving Birmingham for Paris, and up to the time I went to the Exhibition, I fully expected to have free admission into the glass works in and around Paris, but was doomed to disappointment. I could see the batches of representatives of other trades depart every morning to view the various manufactories, and to me the reflection was anything but pleasant. At last M. Haussoullier told me he had made repeated applications for admission to glass works, and all to no effect, as they were treated either with a blank denial, or silence. Here let me state, in reference to the gentlemen in connexion with the British Workman's Hall, and especially Messrs. Haussoullier, Glazier, Fouché, and also Mr. W. C. Aitken, from Birmingham, that I received every mark of kindness and attention from them, and I believe they did all that was in their power to get me a permit to visit the glass works of Paris.

I was not however to be daunted by this, and resolved, if the discourtesy of the employés was determined to keep me out, that I would try what my own perseverance would do to get me in. After three days spent in dodging about, my labour being double on account of my not being able to speak the French language, at last I succeeded, and found myself inside a glass works, expecting every moment to be turned out for not having a permit.

I will now describe the interior arrangements. In a wide open yard stood a long square shed, lofty and well ventilated; inside stood four furnaces in a straight line down the centre. I found the men and boys at work, like so many bees in a hive. The floor was kept clean, and well swept. The furnaces each contained 12 pots or crucibles, six for refining the glass, and six for the men to work at. The furnaces stand upon a third less ground than the English, and are fed with rough slack or small coal, like those in this country. One furnace was out, and to the other three furnaces, or 36 pots, there were six sets of men and boys at work, and to each set there were from five to six boys; to four sets there were three men and six boys, and one had four men and six boys. Another making straight gas chimneys had three men and five boys. They work in "journeys" of six hours, but in some places they work twelve hours to the journey. To these 20 men working here, there are 36 boys, two of them only being apprentices. The classes of work being made were various, one set making large show bottles for chemists' shop windows, about 16 inches across the body or bulge. These were blown in a wood mould, and there were ten workmen; and to this set the only

advantage was, the bottles were all one shape. They were not made any quicker than if they had been blown by hand. Another set of nine men were making wine glasses. The workman or finisher shears his glass whilst sitting down in the chair, and a boy holds a wood palette to the top to take off the roughness.

Another set was making frosted, or what some call "crackled" work, and the following is the mode by which it is produced. One man gathers out of the pot a small quantity of glass, blowing it into the form of a small ball; a boy brings to him a small piece of solid ruby glass, which he spreads over the small hollow ball just made; he then covers that with a larger quantity of flint glass, and puts it in a wood mould to shape it for working. He then puts it in the fire to heat, and when hot he rolls it into a pan of powdered glass, and repeats the process until the whole surface is covered. He then blows it into the shape required, and just before finishing the blowing part of it, he plunges it into a tub of water. The article is then finished by the workman, and this produces a very good piece of pink frosted work. I believe the powdered glass is made thus:—It is blown into a globular shape of the required thickness; this globe is then dipped or plunged into water, and it is thus slackened or reduced into powder or small fragments equal in size; this is afterwards well dried, and when used, heated up to the required heat; it adheres to the crudely formed article, and facilitates the production of the "crackled" appearance.

The French glass-blower is paid by the day, and settles up once a month. It is usual when the men are sick to pay them half wages. In some cases they have places to live in free, and in others an allowance per month instead. The cinders that come from the furnace are picked from the refuse, and afterwards distributed amongst the men, to be used by them as fuel at their own homes. When the men become old in the service of an employer, and past work, they get a regular monthly allowance. The French Government publish, every ten years, a report, that contains the wages of all trades. In their last report, published 1864, they give the following list of wages, but one of the gentlemen attached to the commission at the British Workman's Hall, a Frenchman, tells me that wages are 15 to 20 per cent. higher now than they were then:—

Out of 604 workmen who work at the glass-blowing,

				Francs	
31	get	...	...	3·8	per day
16	"	...	...	3·25	"
47	"	...	...	3·50	"
9	"	...	...	3·75	"
83	"	...	...	4	"
11	"	...	...	4·25	"
29	"	...	...	4·50	"
177	"	...	...	5	"
14	"	...	...	5·50	"
85	"	...	...	6	"
7	"	...	...	6·50	"
12	"	...	...	7	"

				Francs.	
4	get	...	...	8	per day.
70	"	...	...	9	"
9	"	...	...	10	"

604

To these men there are 33 apprentices, who receive the following rates :—

- 12 get no wages, only board
- 3 receive 25 to 50 centimes per day, and board
- 18 get 1 to 2 francs per day.

Morals and Habits :—Out of 649 operatives, 49 are labouring men connected with the trade ; 491 lodge in rooms furnished by themselves ; 155 in ready furnished rooms. 629 have good characters ; 14 doubtful ; and 6 bad. 536 can read and write ; 113 cannot do either. Out of 33 apprentices, 27 can read and write ; 6 cannot either read or write.

I could not find out whether they had any provident society or not, but there is no trade union.

As an example of the English flint glass trade I will give you what information I possess relative to the statistics of the Birmingham district ; also their mode of working :—On entering a glass works, or more commonly called here, a glass house, you find a square shed built round the furnace, and the men working in sets of four ; two men, a youth, one boy, and occasionally an extra boy, and if you have seen the French at work you will at a glance see the different styles of working. Look at that man making wine glasses, see how he stands on his feet by the fire he works at ; watch how quick and clean he cuts level the top of the glass, without the idle habit of sitting down in his chair to do it. Ask him if he has a wood palette to make the top level ; he would laugh at you, and say, why the wood palette would spoil the appearance of the glass, because if it is not sheened clear, if any bits are left on the top, and you had a palette to make the top level, the bits left must go somewhere. If left it will force a bulge or wrinkle in the side of the bowl of the glass. You will also find the English workman work by the piece, not by the day, and unless he is quick, and keeps his wits about him, he does not get paid what he ought. Again, any inconvenience that may arise in the works in France, it makes no difference to the man, as he is paid by the day ; but the English workman he has to put up the best way he can with all this, because if he does not make the quantity (as that is the regulation), why he is paid only for what he makes.

I find in Birmingham there are working in large houses 136 sets of men to 130 pots or crucibles, 300 men, 66 apprentices, and 136 boys ; besides this, there are several small places not recorded, and as they work two sets, one at work whilst the other rests, it leaves the 130 pots or crucibles to 68½ chairs or sets, or something like two to each. You have already seen that the French work 8, 9, and 10 in a set, and six sets have 36 pots, that is six to each ; this, consequently, gives them more room and convenience. In France they work in sets of nine on an average, that is five more than our English, and yet there is only one workman or finisher to each set, and all the goods go through his hands

last. There they have 33 apprentices to 604 men, but in Birmingham (which is a fair sample of the whole trade) there are 66 apprentices to 300 men. In reference to the wages of French and English glass-blowers, if the various benefits received from the employer by the French are added to the wages, and the cheaper way of living of the French workman in one scale, then place the wages received by the English workman in the other, if there is any balance in favour of one or the other, it would be on the side of the Frenchman. With this exception he is more dependent upon the employer's bounty, and that is just the part a true English workman does not wish to be better in, because as a rule they do not ask for bounteous gifts, but wages, and like to be left more to their own independence.

The English worker in glass is many years in advance of the French as regards ability to turn out the work good without model; he works by far the hardest for his money. It appears to be a characteristic of the French nation that although the men are very quick at some things, they work very leisurely.

There are several disadvantages the French employers are under that the English employers are not; for instance, the five pair of hands extra to the set must create an item in their expenditure; also the extra pots or crucibles to a set are a greater expense; then the coal is double the price. The only advantage I can see is, spar is cheaper than lead, and makes cheaper glass. A large quantity of goods are made in wooden moulds, requiring only men of second or third rate ability, whereas in England the same article as made by the tools of a glassmaker requires men of first-class ability, who command a higher rate of wages than those require who do the mere mechanical part of blowing goods in a mould; how it is they can sell cheaper than the English manufacturer (which is doubtful if quality is considered) I will leave for others to tell, who have better opportunity than I had to obtain the information.

One thing England may rest assured of, that if she does her part in pushing forward the education of her glass-making sons, she will have no cause to fear that she will ever lose her prestige through foreign competition. No doubt the glass trade has increased in France, and so it has greatly increased in England within the last eight years. The English glass-blower has a trade and provident society combined, which allows its members, on payment of 1s. 3d. per week, the following benefits:—When either sick or unemployed, 12s. per week for 13 weeks; 10s. for 13 weeks; 8s. for 26 weeks; 6s. for 26 weeks; 5s. for an additional 26 weeks; and if a sick member has not been a paying member 10 years, he is then put upon 2s. per week as long as he remains ill; and in case of death of himself or wife, he or she gets ten pounds towards funeral expenses; but any member being rendered incapable of working at the trade by accident, will if a paying member 10 years, receive 4s. per week; if incapacitated from work by other causes he receives the following amount of superannuated allowance:—

If a paying member 10 years	3s. per week
" 13 "	4s. "
" 16 "	5s. "

If a paying member	19 years	6s. per week.
"	22 "	7s. "
"	25 and upwards	8s. "

And the Society has power to grant any superannuated member who may apply for it a sum not exceeding £50 in lieu of his weekly allowance, and he has then to give up all further claim upon the Society.

If a member is out of work, and a situation in another part of the country is open for him, he is sent by the Society's funds at the following rates:—His railway fare is paid, and he is allowed, if going under 50 miles, 2s. 6d.; if over 50 miles, 4s.; 100, 5s.; 200, 6s. for expenses on the way, &c. Also in bad trade, the Society finds £8 10s. to assist a member to emigrate. Lastly, it supports any of its members who it believes are really thrown out by oppression from employer with an extra allowance.

The Society consists of upwards of 2,000 members. Its accumulated fund amounts to 10,000*l.*; and it has a very strong desire to help forward the education of the trade, as witness the following circular:—

To the Flint Glass Manufacturers of Great Britain and Ireland.

GENTLEMEN—At the late conference of "The Flint Glass Makers' Sick and Friendly Society," held in Edinburgh, June, 1867, after a lengthy consideration of the subject of education among flint glass makers, a Resolution was passed lamenting the deplorable amount of ignorance in the trade, and the all but total want of the most elementary education on the part of boys obtained to work in the factories in various districts, who, of course, are expected to form the future supply of adult labour for the trade, and the Conference, being desirous, both for the interest and the credit of the flint glass trade, that flint glass makers should be at least equal in ability and intelligence to the requirements of the times, offer to bear a large and fair proportion of the trouble and expense, in giving to the boys and apprentices the foundation of a better education, with which we may fairly hope that they will grow up, morally, soberly, intellectually, socially, and artistically, better men.

We believe that the future position of the trade in this country depends very much upon these qualities in the operatives; that they are of great and equal benefit to employers and employed, when possessed by the latter, and at the same time are the most powerful weapons with which to meet the severe competition of the foreigner.

We are desirous that no shortcomings on our part may be the means of arresting the progress which we are proud to find the British flint glass manufacture is making, as developed at the present Exhibition in Paris, and wish, by a good understanding between masters and workers, that all such concerns might be discussed and settled to our mutual advantage. We therefore suggest, with all deference to the superior education and higher intelligence of employers, the two following methods, by either of which, we believe, our desire may be obtained, at the same time being desirous of having it understood that they are only suggestions, and that we would be most willing to adopt any other means to better educate the boys and apprentices which you could propose.

1st Suggestion.—To establish schools in the various districts solely connected with the trade, to be open on Mondays and Saturdays, or such other times as may suit the working hours of the district. These schools may be taught by employers, by the better educated operatives, or by their nominees. One-third of the expense to be borne by employers, and the other two-thirds by the Flint Glass Makers' Society. Boys to pay a small sum weekly, to form a fund from which to give prizes annually, in tools, books, &c. to such of them who have attended most regular, and made most progress during the year. Boys to find their own books, slates, &c.

2nd Suggestion.—To compel boys to attend a national or other public school, when off work, on Mondays or Fridays, and to obtain the services of a trained or other approved schoolmaster, to have school open for our boys and apprentices half days on Saturdays.

In a circular like this, we do not attempt the many arguments which could be advanced in favour of its object, but if asked how we would enforce either of the above suggestions, we would say that a fine should be inflicted on boys for neglecting to comply with any regulations which masters and workers may agree to on the point, and after about two or three years from the time of making such provision for their better education, no boy should be advanced to make foot, who could not read, write a legible hand, and pass a simple examination in arithmetic.

In issuing this to our employers, we are aware that we are only taking the initiative in a direction which many of you have already intimated a wish for, and that without your hearty co-operation, any effort of ours to improve the intellectual condition of the boys and apprentices will, to a very great extent, prove abortive. We therefore the more earnestly ask you to give a serious and candid consideration to its contents.

Please address all communications on the subject to

JOHN CARTWRIGHT,
Oldswinford, Stourbridge.

Having now brought my Report to an end, I sincerely hope it may be found useful, also that you will give me credit for having done my best to fulfil the mission you placed in my hands; but I am only sorry that my education and ability are not a hundred-fold greater, so that I could have placed before you a far better Report.

DIE SINKING.

By CHARLES WM. MOORE,

DIE SINKER, BIRMINGHAM.

MY readers will pardon me for a slight apparent digression from the prescribed subject of the Report, which, however, I consider necessary to point out more clearly the causes which influence the style of British and Continental die sinkers. To do so I must touch upon a subject that has caused great debate among many talented men, and even still remains a matter of dispute. I refer to the art education of Britain and the Continent. It would be unwise for me to dwell long upon this subject. I will therefore touch upon it only when absolutely necessary.

We certainly have much to fear from foreign competition in this branch, the Continent educating and supplying the world with artists. I cannot believe that Englishmen are less industrious than Frenchmen; therefore, I cannot help ascribing our backwardness mainly to our inferior method of art instruction. I can speak from experience, having undergone the tortuous process of passing from straight stroke to pot-hook, from that to a leaf, and so on through 300 patterns, before anything appears in the least pleasing. It becomes disgusting to an impulsive and young boy to go through all this labour without the satisfaction of anything worthy to show or bearing any resemblance to a picture. All the keen edge of his art appetite gradually disappears. And in the rare instance of his penetrating to the antique or modelling room he does so with the motion of, and often about as much real love of his occupation as, an automaton. Having been worn out and sickened with the dull routine adopted, he only remains oftentimes till from under parental restraint, and in nine cases out of ten in two years the instruction is all forgotten, which is inevitably the case when not pursued and followed up, or when the student possesses no relish for the pursuit.

I may here presume to refer to our well-known drawing master, Mr. Sines, of Birmingham, who adopted a widely different and much more pleasing method of instruction, by giving his students an occasional animal figure, or in fact anything to give zest to the employment, he contending that the instruction ought to be to the mind, by constantly keeping the mind alive to the beautiful; the mere pencil practice coming naturally, and in proportion to the appreciation of beauty of which the pupil was possessed. The results were in Mr. Sines' case that most pupils at the present time are men in most instances artists, or d with the arts of our town.

The French must have some more pleasing method than that adopted by our public schools, or it resolves itself into the fact that we are naturally duller than they in our appreciation of the beautiful and artistic, which I cannot believe, seeing that we have sufficient to observe their growing superiority. They do, however, progress rapidly in the arts, and become expert modellers (the ultimatum of art studies), and the knowledge that they will find a market for their talents, undoubtedly gives a great spur to their labours, as is seen by all nations flocking to Paris when in quest of the artistic; and with all the advantages of Government encouragement, and their constant association with the *beaux arts* in a country where innumerable specimens are collected, it would be surprising if they did not progress.

In Paris, with hardly an exception, every employer is an artist; theoretically he is therefore competent to judge the merits of a design offered to him, and will not sacrifice his taste, and allow himself for the mere matter of a few shillings in the manufacture or design of the article, to produce anything slovenly in manipulation, the very point which is the secret of their success; the mere intrinsic value of their articles being in many cases inferior to our own. The manufacturer cannot produce an article to compete with the French, and save in labour as well as material. Knowing, however, that in England artistic knowledge does not command high wages, there is no inducement for a man to study more than his fellows, as he can get wages equally high in mechanical trades that are easily acquired, without straining the faculties to any considerable extent.

I speak of a die sinker and his employer as master and man, although most die sinkers become masters for themselves early, no doubt with the hope of receiving the profit that does not bear going through the masters' hands first, and also to maintain a feeling that they are all conscious of, that it is to them the manufacturer is indebted for the sale of an article produced in a die, the die-sinker being the creator. It is thus he, feeling his superiority in attainments, struggles on, asserting his dignity, following the motto of our own town, "Forward," though in many cases finding it reversed. It is not wonderful that being rebuffed when endeavouring to throw art feeling into his work, the race of die sinkers should degenerate upon finding it possible only to succeed by producing quantity. The quality must deteriorate, and Birmingham workmen at least become in time virtually extinct.

Having thus shown what, in my humble opinion, influences in some measure the falling off, I can go more fully into the subject prescribed. Before doing so, however, it may be necessary for the benefit of the reader, who does not understand the technicalities of the trade, to show the different methods used by the English and foreign die sinkers.

In Birmingham, where such an infinity of trades are pursued, the higher branches bearing little comparison with the heavier work, as chandeliers and brass foundry dies, the workman adopts the readiest method of removing quantity, using freely hammer and chisel, and producing direct the design upon the die in concave. Those who have raised themselves to the highest walks of the profession still retain this method. Having a greater proportion of heavy work, it would

necessitate separate appliances for each, and in fact cause a complete revolution in his style of working. By this means a skilful workman may produce work equal in artistic merit.

I may mention that in England in medal dies the chisel is rarely used, the work being done with tools known as gravers, but generally in concave, or rather a mould. The architectural medals of Joseph Moore, of Birmingham, will be sufficient proof of the excellence and delicacy attainable upon the die direct. The medals were published by Davis, of Birmingham.

The foreign die sinkers, on the contrary, cut upon a block of steel the device in relief, owing, I have no doubt, to their familiarity with modelling, cameo cutting, &c., preferring and working with greater rapidity upon the raised design, being assisted to a great extent by ingenious machines, that from a cast pattern, the result of the workman's modelling, will reduce or enlarge, at will, the hub which is placed in the machine.

I here give an idea of the machine as near the principle as I can recollect.

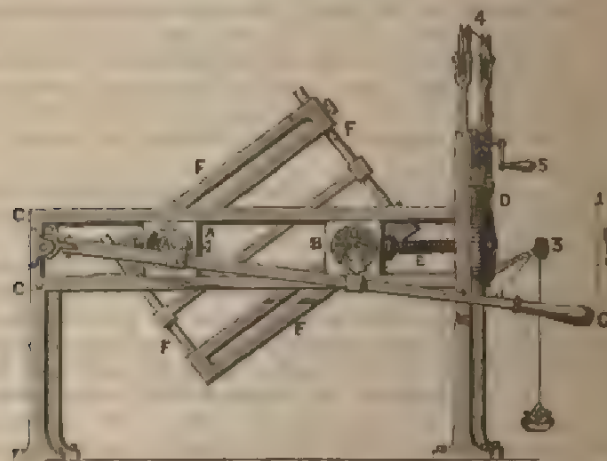


Fig. 1.

A (Fig. 1) is a dish for the reception of the hub to be cut, with screws to fasten the hub.

B is a plate on which is fastened the iron model. Both these run upon v slides—C, C.

D is a ratchet action to propel the plate B, by means of the screw E.

F is a sliding frame working on the flanged pins A and B (Fig. 2) on the back of the dish or plate. The frame is adjusted to the utmost nicety by means of sliding rods.

G is a lever working from double-joint H. Upon the lever run two slides, for holding respectively a cutting tool at A and blunt tracer at B (Fig. 1).

The lever is kept to work by a cord passing over pulley 3, which may be weighted to procure any strength of cut.

The cut being downward, the lever is drawn up by the cord passing over the pulleys 4.

We will suppose the lever is at 1 (on dotted line in Fig. 1). The lever being pressed down, the tracer passes over the model, not cutting, but merely following the form. The cutter at the hub reproduces the cut upon the hub, not at once, but by little cuts, and by adding weights to the cord 3.

The lever is now at the position shown in Fig. 1. The handle 5 (Figs. 1 and 2) is moved one tooth, pushing forward B and drawing nearer A. By running the small cog upon the large one any degree of fine cut may be obtained.

The cutter and tracer on the lever remain stationary. The hub is almost always reduced, not often enlarged, from the model.

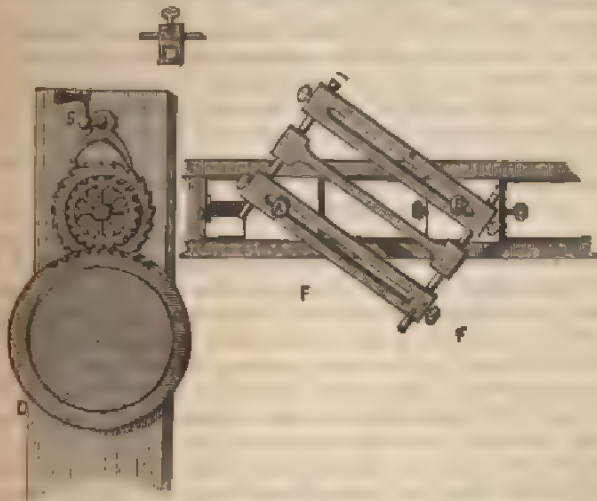


Fig. 2.

Although this machine is a great assistance, the hub requires to be put into the hands of a skillful man to finish, seeing that it is left in vertical lines, the delicacy of the tools not allowing them to follow any deep indentations. These machines being very expensive, it would not pay a die-sinker here to keep one, there not being sufficient high-class work to repay the purchase.

Our celebrated London die-sinker, Wyon, has, I believe, one in his possession, his name demanding for him justly a large price for his work. This process is undoubtedly the most expensive, seeing that the hub when produced requires to be forced into a die to form the working tool for the production of the medal, &c. It has a great advantage over the ordinary method in cases of silver and any delicate metal. The grain of the steel die by the process of hubbing becoming compressed and close, it imparts to the article a fine silky surface, and bearing sharp in-

danted lines that can only be produced thus, which give character and vigour, showing the artistic tool-marks that give texture in a model. This style is much adopted by the French, who, however unnatural and given to sacrifice anatomy in drawing, make amends by their vigorous execution and artistic arrangement.

Let it be understood that the French prefer producing large work by modelling, casting, and depositing by electrotypes instead of by die, this process of hubbing being only used in smaller work. On inquiry I was informed it was rare to find chandelier and such dies in a French workshop.

Having by the kind intervention of M. Haussoullier been enabled to visit as many workshops as my time would allow, and preferring to visit those most connected with my own trade—being, as I thought, more in my list of instructions—under the guidance of M. Fouché, I visited several, including the Royal Mint, at most places receiving the most gentlemanly and kind reception.

My wish to analyze thoroughly the contents of the Exhibition building prevented me from visiting all the workshops where it would be possible to see the results of die-sinking, which, being so many, would have been the work of months instead of days; the results actually in the Exhibition being far under what I expected to find. The decoration of many articles being prepared especially for that one alone, were frequently elaborately modelled and deposited, not being fair specimens of what is done to suit the market, so much as showing what can be done, each having striven to produce one article of surpassing excellence. It is not strange that we find things that a die would produce to advantage, in quantities modelled and cast, this being a less expensive method than a die. I must give a description of what I did see in the order I found them.

At the Mint, although I did not actually see any die-sinking—the original dies being cut by such men as Bovy, Barre, and others, whose workshops are away, a die-sinker only being employed in the Mint to repair the many dies multiplied from the original—yet I cannot miss this opportunity of stating that in this particular branch of manufacture they are inferior much to the Birmingham mints. I carefully examined several pieces of silver and bronze, and found the dies had been carelessly set, making such imperfect edges as would in England be at once condemned; I mean particularly the flat edge outside the beads. In speed they are also much inferior. They can, they say, produce fifty sous per minute if required, whereas it is common here to strike seventy halfpennies. Their machines for cutting the blanks are also much slower. For those it may interest, I may add that presses and cutting-out machines are worked on the cam principle, not the screw.

In the medal-making here, on the contrary, they adopt some very ingenious contrivances for the reception of the blow by a steam press. I may here mention that all the dies are solid blocks of steel, from the *bar pure*, with an iron band sprung on after the die is cut; a much more wise proceeding than is here the custom—allowing a blacksmith, who seldom here understands the nature of the steel he uses, to buy his steel at the cheapest market, thus getting great variety, treating them all alike, not caring to notice that some steel will not stand a great heat;

and as dies are here used with the iron band welded on, their only object is to make a good outside finish, frequently heating the steel over several times, thus destroying the nature entirely. For stamp-dies these dies sometimes stand, but often break, the sharp blow not shaking the steel to any extent. In press dies of any description, where the pressure is continued, these dies often prove the fallacy of the system; a die, the labour of months, frequently breaking at a blow under the press. Everyone, looking at this carefully, will see the advantages thus secured by the French in press dies at least.

Although I did have the opportunity, and availed myself several times, of mounting from twelve to fourteen flights of steps to peep into a French die-sinker's shop, the slowness of the operation did not, in itself, teach anything. Those whom I did see did not seem to confine themselves strictly to die-sinking alone, but appeared to be modelling and chasing articles not connected with a die. To English ideas they appeared careless, both in the mode of their working, tools, and general appearance, both of which a good English workman, as a rule, prides himself on. The shops themselves were far from comfortable, and in some cases not clean, which they should be, to my thinking, being places where a man spends the greatest part of his life—sixty and more hours per week. They must have great love for their employment not to be alive to any of these discomforts. In all shops, without exception, smoking is not prohibited, but rather encouraged by masters, who argue that while smoking a man does not care to talk, and thus fixes his quiet attention upon his employment.

An old smoker, provided he is not a drinker, will readily understand me when to smoking I ascribe a great deal of that identity possessed by Frenchmen, for it stimulates the imagination. The French and Germans, whose style is more telling and effective than ours, are both great tobacco smokers, as also have been many of our eminent artists, in all branches of art.

I was much pleased on visiting the workshop of an engine-turner and cutter, but whose name I have unfortunately lost; it will, perhaps, be known when I mention that this gentleman exhibits an unusually large engine-turned clock-dial in the Exhibition. It is $3\frac{1}{2}$ feet in diameter, and most elaborate and intricate in pattern. He showed me the machine he had constructed especially to cut this dial. Some idea may be formed of their indefatigable perseverance when it is known that this gentleman modelled every rose and pattern used, and entirely constructed this machine, that occupies a room 14 feet square.

Engine-cutting is very much used by the French, as will be seen by their buttons, sardine-box labels, and, in fact, many articles. It is a trade which, if engine-turners here would pay some attention to it, would become inseparable from fancy die-sinking, as it is in France, where by this means a common label is converted into a work of art by this elegant addition.

This gentleman showed me also several brass dies, used for the pressing of substances as horn, vulcanite, &c., for musical box tops and innumerable other objects. He himself makes a model, casts it in iron, when, being fixed in one of his cleverly-constructed machines, he is

enabled at pleasure to reduce or enlarge his die. He thus from a *relief* cuts a die, or rather numbers of dies. Let it be remembered, this machine cuts horizontally; you may then realize the beautiful effect thus obtained upon the impression, especially if black, contrary to the hub cutting machine. By this process (upon brass only) he is enabled to cut the most delicate architectural designs, without the same fear of breaking tools before mentioned.*

I have also to call attention to the following, which, if not a secret, I am assured is not generally known in England, and which must prove a great saving to embossers of paper and large consumers of such goods as button cards, funeral, or any embossed ornamental cards. I can call the process nothing else than quicksilver die sinking.



A piece of copper is taken, the required size of the card to bear the design, and thoroughly cleansed, to enable quicksilver to attach itself when applied. The subjoined sketch, for instance, is drawn upon the copper. The pattern is then painted between with Brunswick black, leaving the pattern on the copper exposed. Quicksilver is then put upon the exposed copper, when, by a well-known law of attraction, the quicksilver may be heaped up until it literally assumes a beautiful relief, of a mushroom section, a form well adapted for paper, to prevent cutting. By then carefully covering the whole with very thin Plaster of Paris, a mould is obtained. If this operation be carefully performed, the quicksilver will retain its position without spreading over the plate, provided too great a weight of plaster is not put on. From this plaster-mould a die is cast, in brass or iron; a die-sinker may then repair it, when needed, in a few hours. Certain parts of the ground may be engine-cut, or frosted, and thus an elaborate and what, if cut, would be an expensive die may be produced in a few hours, that would be the work of days to a die-sinker. This process is exhibited by M. Dulos, Rue de Seine.

I first sought for the medals of different nations. To mention them singly would be a work of much time. I must, however, confess that, with few exceptions, those in the French courts were of surpassing excellence in execution. There is no doubt whatever most have been produced by the aid of the machine I have noticed, the models, in many cases, being exhibited with the medals; the models being often ten inches in diameter where the medals are only two inches. In some there were three or four different-sized medals, the dies evidently being reduced from the same model. These medals plainly prove the truth of my assertion—namely, they are carefully finished after being taken from the machine. Many of the models used are the work of females. The seven heads by Mlle. Gregoire were beautiful specimens.

The works of Oudine, Barre, and Bovy were, in my opinion, de-

* I may say here that the tools of Raoul, Paris, are something superior to anything in England, as smooths, gravers, chisels, &c. I was shown over this gentleman's establishment,

cidedly the best ; although copper medals, they are perfection in colour of bronze and general make. In tin, or white metal, I did not see one good specimen, the lapping of the die being one great reason why they all look leaden and dull. The edge is also imperfect and rough. English tin medals are much superior. The French, in their designs of medals, keep an eye to the classics, whereby they are enabled to give form to a figure. I did not see one medal where a man in trousers, or a female in modern dress, is represented ; a much too common practice in matter-of-fact England, where a farm labourer, surrounded with pigs, rakes, and turnips, is insisted on in preference to Ceres and her emblems, for an agricultural prize medal.

The architectural medals of Wiener, of Belgium, are much superior to the French in point of architectural drawing. The medals of Schnitzspahn, Hesse, are a beautiful collection ; in design they are wanting as compared to French ; in manipulation and make of medal they are quite equal, and in mere make of medal better. The colour of the bronze is of surpassing beauty. Some from Spain and Portugal fall far behind the others, though all bearing evidences of hub. The Ottoman empire exhibits medals and coins, silver and gilt, carefully and neatly executed, the work of the mint die engraver, a Mr. Richardson, a Birmingham man. They are creditable specimens, both in cutting, drawing, and make. The medals of Wyon, of London, do not suffer at all in comparison with any of the continental ones in truthful drawing, careful finish, and make. I would prefer to see a little more action in the drawing, the only point wherein they fall short. Medal making in France is entirely separate from die engraving, being licensed by Government ; therefore it is not with the engraver that the fault of the matrix lies. The workshop of M. Massonet, the Imperial medallist, showed me numbers of dies, the work of all the most celebrated continental artists. This gentleman presented me with a large medal, gilt, $3\frac{1}{2}$ inches in diameter, of Lamartine, by Bovy, a very fine head, as a souvenir of my visit. The prize medals of the Exhibition, and those sold in the building, are made by Massonet, of which most people have had the opportunity of judging the merits.

The French have a means of producing elegant strips for the decoration of windows, dresses, and even more useful articles in thin metal, which is done by cutting the die, or rather a roll ; a counterpart roll is got off this one. The die roll is then softened again, the ground is then cut away some depth between, leaving a sharp cutting edge around the work on the die, for instance, a sprig of ivy. The die and counterpart are both hardened ; a strip of metal may be stamped, as it were, and pierced in one continuous strip a mile long if necessary. This process, I can see, might be applied with advantage to many things, as for shell work. The articles of French jewellery exhibited, actually the result of dies, were few ; those that were almost all proved to have been cut by clever men, without regard to expense. The Egyptian style seems much in fashion, sphynx heads, &c., forming medallions for necklaces, and armlets.

Alike, in regard to their method of decoration, are the French and Italian jewellers. They form ovals, squares, and plain shapes in dies. The ornamentation is then effected by soldering filigree wire upon these

shapes, thus gaining an effective appearance by the under-cutting, as it may be called ; the very thing that gives effect to their modelled objects. In shop windows were greater evidences of the die ; but even here it is in design that they are so new and original. If master jewellers in England would not mutilate the designs, and limit the price for dies, the most satisfactory results might be obtained in a trade where beauty of design and delicacy of finish are of primary importance.

The English die-sinking is by no means fairly represented. I can at present find far more beautiful things at home than I see here exhibited ; except the stamped work from cast dies used by Messrs. Winfield, of Birmingham—rolled tubing pilasters, for bedsteads ; also the stampings of Joseph Hill, of Birmingham—many of these excellent works—and several cast dies of extraordinary finish, I see little to attract any attention. The chandeliers exhibited are mostly the best, and principally cast ; the slovenly work upon the balance weights, however, much detracting from the rest of the work. This important feature of a chandelier seems to have been overlooked ; the same weight in the Greek style of ornament being hung upon chandeliers of every conceivable style, thus spoiling many articles that might be good if well carried out.

What little heavy French die-sinking I did see does not strike me as being much superior to our own. This does not appear to be their forte ; powder-flask dies, book ornaments, and electroplate dies for spoons, forks, &c., being much inferior to the German. Denmark, in Class XXI., exhibits a whole case of plated ware, comprising every article possible in this branch, all the dies being most elaborate, and delicately cut. Prussia also has a case of this description equal in merit.

The Russians, and many other nations, are very far behind either English, French, or Germans, in die-sinking, and the manufacture of the articles produced from dies, taking those exhibited as a criterion.

The conclusion I have been forced to arrive at is, that our great drawback is the want of art appreciation in master and man ; curtailing art for mere sordid motives on the one hand, and having no encouragement on the other. The French and German are far seeing enough to know that the only way to make a demand for articles of adornment of any kind is in paying the greatest attention to the artistic rather than to the durable. An earring or brooch is not required to last generations, but rather to change with ever varying fashions. Durability and elegance seldom can be incorporated in such articles ; and, judging from their position in the market, it is elegance we require. In die-sinking I have no hesitation in saying it is our art education alone that keeps us back. As a proof, there are many who have attained the mere mechanical parts of die-sinking, and can cut any object to perfection where drawing is not required, as it is in a figure, &c., but fail in the higher branches.

Trusting these remarks may prove satisfactory, and of some benefit, and that the advantages offered me, among other artisans, by the Society of Arts, of visiting Paris, may not be thrown entirely away, I here conclude my Paper, making use of an expression of the worthy Chairman of the Birmingham Chamber of Commerce, who observed that at present, unless some decided steps be taken to counteract it, we have much to fear from French art and German industry.

ON ELECTRO-PLATE.

By HENRY J. FELLOWS,

SILVERSMITH, BIRMINGHAM.

ABOUT twenty-five years have elapsed since a great change, amounting to a revolution, was made in the manufacture of plated goods. This change consisted in the discovery that, by means of electricity, it was possible to reverse the order of manufacture, and plate an article with a strong deposit of silver after it had left the workman's hands, instead of the tedious and expensive process of plating the metal before the manufacture of the article commenced.

The invention was discovered and extensively applied in Birmingham by the late G. R. Elkington, to whose active and enterprising mind may be attributed the great success which this mode of plating has attained. To Birmingham was decreed the honour of introducing a principle which, in so short a space of time, has not only superseded the old method of plating, but has been the means of imparting to this manufacture elegance of design and durability in wear which have never been surpassed by any modern invention. Birmingham is essentially the parent of this process, and to her artisans no small praise is due for the readiness and intelligence they exhibited in overcoming difficulties and prejudices, which always attend the introduction of any new principle. It was some years before manufacturers could believe that anything so extensive could or would be effected by the process of electro-deposition, and it was only when they found that Mr. Elkington was intrenching on their customers that a few licences were taken out. In France the case was different. Mr. Elkington had taken his patent for France, and entered into business connexions with M. De Ruoltz, and, soon after, with M. Christofle, who immediately commenced the manufacture of spoons, &c., to a very large extent, but that of dinner services, &c., was still in the hands of the Birmingham house, and it still remains pre-eminent for the great variety and excellence of its designs, as also for the base of the article on which the silver is deposited. Birmingham alone uses the whitest and purest of metals, the colour being nearly equal to sterling silver.

In the French manufactories little else but brass is used as the base of their electro-plate. This metal is convenient to the French mode of work, by its ductility. All the articles manufactured for the table and dinner-services are spun at the lathe, whether round or oval; whereas, in England, all the best work is either raised by the hammer or stamped

in dies. A curious reason was offered to me for the use of brass, namely, that their customers could more easily discover when the articles were worn out and unfit for use. Best German silver is not sufficiently ductile to be used for spinning purposes. Where the common kinds of German silver are used, spinning is more practicable.

In England, all the best cast work used for handles, feet, &c., is chased after casting, before it is attached to the article. In France, the handles, &c., are pressed in double dies, which are very nicely cut, and the impression of the mat is good, but the work has not the brilliancy of those which are chased by hand. The latter process is far more expensive. The patterns in France are not so numerous as in England. I observed the same handle and spout used for a great many different shapes. The English manufacturers are far more prolific in design.

I have had an opportunity, through the instrumentality of the Society of Arts, of visiting several of the manufactories in Paris.

M. Christofle very seldom uses any metal but brass. The advantages he gains, both in time and money, over the English manufacturers by the use of brass instead of German silver are very great; but this is not really electro-plate as understood by Englishmen. Though in common work, in England, large quantities of brass are consumed, the best houses never use any metal but German silver.

All the work in M. Christofle's manufactory is said to be hard-soldered with the same quality of solder which is used in making silver. Soft solder is very little used. Deposited ornaments are not used to any great extent. The majority of their mountings are pressed as before mentioned. The press is on the same principle as that used for striking medals, by means of a powerful screw. The falling hammer is also used, but the screw is preferred for all work to which it can be applied.

The arrangement of the shop is different to ours. In one, which I presume was for the benefit of visitors, I found pressing, spinning, raising, and mounting; in fact, all the processes that constitute the making of an article, being carried on. The light was from the roof; the lathes were run from a top shaft, which gave more room on the floor. The workmen do not appear to work so hard as the English, but climate may have something to do with this.

The old method of French plating seems to have quite disappeared.

Embossing is not very extensively used in ornamenting the work. Flat chasing seems to be more in fashion. Etching is also much used, few articles being engraved, as universally practised a few years since. Engine-turning is very much used; and this, when relieved with engraving, has a good effect. There is nothing new to the English in all these modes of ornament: all have been and are well known.

Saw-piercing and tool-piercing, so much used in England, are rarely seen in Paris. I think the advantage the French have is in their superior outlines, a branch of manufacture to which they pay great attention.

The working hours of labour are ten per day, commencing at 6 a.m. and leaving at 6 p.m., with an allowance of one hour for breakfast, and one for dinner. In some instances they work from 7 a.m. until 6 p.m., allowing one hour for dinner.

The average wages a workman receives are about five francs per day. Some of the skilled workmen get from ten to twelve francs per day. The women average from two to three francs per day. Their hours of labour are eight. The time is kept by the Lodgeman. They have no cheques. Every man's time is entered in a book, and he is paid according to the time registered in that book.

The door is closed at five minutes after 6 a.m., and five minutes after 2 p.m. If any man is locked out in the morning, he is fined fifty centimes; if for the whole day, one franc. All fines are appropriated to the Sick Fund, to which the masters are very large contributors.

They have about 500 workpeople employed in their establishment in Paris, out of which there are 150 women and 50 apprentices. The apprentices are placed under the best workmen in the manufactory, and they are expected to teach them the trade, the master giving them certain remuneration for their trouble. The wages of apprentices are the same as in England. Overtime is paid a little more for than regular day time—for instance, a man working two hours receives a quarter of a day—that is, at the rate of eight hours a day. They have no reading or dining-rooms connected with the manufactory. I was anxious to know how they got at the cost of an article. The principle they adopt is this:—They have one article made first and then give the price of each part to the man who makes them up. If they have any man who is very quick, and turns out more work than he is expected to do, that man gets extra remuneration at the month's end. On the contrary, if there is a man that is slow and does not earn his wages, he is told at the month's end that he must either subject himself to a reduction of wages or leave. The result is that he will rather go to another establishment and work for less than stop where he is.

Duponchel.—In this case they have some very good articles. Amongst the number is a kettle and coffee service with tray, etched and gilt, which has a very good effect. They have also some buttons finished in the same way.

Odiot.—This firm has some coffee and tea services, which are very good in outline, and very well made. They also exhibit a large centrepiece, with figures of workmen, tools of Vulcan, and pieces of machinery. From the style of the centrepiece I should conclude it must have been made for some one connected with ironworks. The figures on this article are very fine.

Fanniëre Brothers have some very good coffee and tea services. One service, with flowers in green gold with bands of red gold intermixed, is very effective. There are also some shields in iron, which are very beautiful, and some very pretty salt-cellars, mounted with figures of Neptune and Amphitrite, with other works of an original character. They also exhibit a fine specimen of repoussé in iron; subject, the fall of Satan; also some glass claret jugs, mounted and engraved in the Renaissance style.

Barbédienne is the largest exhibitor in the Exhibition. He has splendid vases six feet high, covered with partitioned enamel, also candelabra, clocks, and a cabinet covered with beautiful enamel. The

predominant colour seems to be yellow, and there are some exquisite cups in copper, parts of which are relieved with gold and silver, and are very effective.

In visiting the manufactory I saw the beautiful process of enamelling, from the commencement of making the enamel to the final finish of the article. The workman is seen with his enamels all laid out before him, and with a small charger fills up the cells with the different colours. I saw several articles under the process of firing. That process requires very great care, but in the hands of skilled workmen there appears no difficulty.

They have a large vase nearly three feet high, made and enamelled in one piece. Every part of the surface is covered with the most beautiful hues from the enameller's palette. They have more than one hundred tints in use. I should remark here that this vase is the first attempt at enamelling so large an article in one piece. All the large enamelled articles in the Exhibition are done in panels. The other processes are carried on very similarly to the English. In their casting they differ from us in one particular point—*i.e.*, they keep a set of men that do nothing else but attend to the melting of the metal and pouring it into the moulds. I think that arrangement is very much superior to our way of casting. I believe it is general in England for every caster to pour his own work; that being the case, there is not that certainty over the metal that there is in the French method.

Turquet.—In this case there are some very good tea services. One service has a ground of black oxidization divided by bands of gold. The etching on coffee service is also very good.

Debruge has an excellent enamelled and gilt service and plateau in the Grecian style of ornament. The fashion of these articles is very excellent.

Rudolphi—In this case there are some very fine specimens of oxidized silver.

HOLLAND.

The articles exhibited by this country, consisting of candelabra, epergnes, baskets, and cruet frames, are not very striking, except from being very plain and ugly.

The Belgian articles are very similar to those of Holland.

PRUSSIA.

Sy and Wagner come out very strong. They have a very beautiful centrepiece; it is a fine piece of work. There are some desert plates, ten inches in diameter, represented to be repoussé, very beautifully finished; but when I came to examine them I found them to be cast. The surface of these articles was remarkably clear. They also have the large shield in repoussé exhibited in London in 1862.

Vollgold and Son have a very elaborate centrepiece, with plateau, which is very effective, but marred by the plateau being too short. They have also some specimens of repoussé, which are very fine, and a good display of things in general. I had some conversation with their

representative respecting their mode of work. I find that they have no sick societies connected with their manufactories, but one something similar to our trade Societies; when a man is out of employ he is furnished with means to seek employment until he finds some.

RUSSIA.

In this court there are some very fine specimens of niello work introduced into cups, waiters, and spoons; they have a waiter with twelve liqueur glasses, which is very effective. There are also in this court some very fine specimens of urns in brass and copper. The taps have ornamental side handles.

SIAM.

From Siam they send some very good specimens of niello work, which are very effective. If it could be introduced into coffee services by some of the English firms at a reasonable price, it might take, to a certain extent, but not as a leading article of silver plate.

UNITED STATES.

Tiffany and Co., of New York, have but a very small case of silver goods, but the articles exhibited are of a very superior class. The coffee services and waterjugs, ornamented in flat chasing, are very beautiful, both in outline and workmanship; some of the articles are nearly if not quite equal to repoussé. I had an interview with one of their representatives, and learned from him that they made only silver goods, all of the first quality. The workmen average four dollars per day, and the hours of labour eight hours. All the work is done by the day.

GREAT BRITAIN.

Messrs. Elkington and Co.—The articles exhibited by this firm have attained the greatest distinction in metal work, not only in gold and silver, but also in copper, bronze, and iron, and it is difficult to speak of their works in one metal without including the whole. The first thing that attracts the attention is the silver shield, the subject taken from Milton's "Paradise Lost." It is one of the very best things in the Exhibition; the work in it is of the finest quality.

There are also some rose-water dishes and vases of a most beautiful and elaborate description, and the repoussé work, in silver, is very fine. They show some very good designs, in bronze and iron. The different articles they exhibit in enamel, principally on copper gilt, consist chiefly of inkstands, vases, and cups, all in the *champ-levé* style. The greatest success is in their chess table, which is of copper, silvered and gilt, and enamelled something after the style of the French *renaissance*. Another beautiful service is a dessert service, in silver gilt, with solid gold vase. The style is very elaborate. The gold vase is richly enamelled, and set with precious stones.

In speaking of the enamelling of this firm, I think there is great praise due to them for the vigour they have thrown into this class of

decoration. There is a marked difference in the style and finish of the goods compared with the French. The surfaces of all the goods, especially flat surfaces, are very much better than the French. Let any one examine the soup tureens, waiters, and trays in Messrs. Elkington's stall, and then those in the French department, they will see at once the superiority over the French. Also in the decoration they will stand a comparison, especially in the bright engraving and engine-turning. They have one or two patterns which the French have nothing like. The French engine-turning consists principally of straight lines, intersected with sprigs and flowers. The effect is very pretty to the eye, but I question very much, after once using, whether that effect would not vanish.

Emanuel.—There is nothing new exhibited by this firm. They have a large shield, in very bold repoussé, but not equal to some in the French courts.

Hardman exhibits a cup, with niello introduced, but it is not equal to that exhibited by Russia.

Hunt and Roskell.—This firm has some beautiful works in silver. There is a splendid vase, which serves as a candelabrum, with bas-reliefs beautifully wrought. The branches are damascened with arabesques. There is a cover in platina, the subject being the Assumption of the Virgin Mary. It is beautifully worked out.

REMARKS.

In making a comparison between the English and foreign manufactures, I think the French excel the English in outline and enamelling; but the great secret lies in their getting one or two good and perfect outlines, and then confining themselves to them. But when we come to the finishing parts they are far behind us.

It is a remarkable fact that they have not a piece of plate in all their collection that has any bright engraving on it.

I can hardly make a comparison, because the things differ so very much from ours, especially coffee and tea services, cruet and liquor frames, &c.; in fact, almost all their things are made for the French, and ours for the English. One thing I am satisfied about, that if the French were obliged to work our metal they would be completely lost, for it is my firm belief if I were to give them, say a sugar basin or a soup tureen to raise from the flat, in the best German silver, they could not make it. What is meant by raising from the flat is this:—the workman takes a circular piece of German silver, and, with a mallet, beats it up to the pattern required.

There is another great advantage the French workman has over the English. In France the artists in general have a knowledge of manufacturing; by that means they are enabled not only to produce their model more perfect for the artisan but also to follow it up through the different stages until its completion. In England it is almost the reverse, frequently you will find after the artist has finished his model he never superintends, or even looks at it until it is finished—the result is that he is disappointed; and again, an artist may make a beautiful design, and still that design, be it ever so good, could not be carried out on account

of its intricate character ; but let the artist get a knowledge how the articles should be made up, so that he could point out any defect or improvement while the article is in progress, the result would be very great. For instance, if you get a beautiful pattern modelled ready for casting, the work shall be very finely cast, and it is given into the hands of a chaser who would perhaps spoil the very effect that was intended, for it is a lamentable fact that not 60 per cent. of our chasers or embossers are sufficiently skilled to carry out the design in all its details ; therefore let us try to remedy this great defect in our system, let us try if we cannot get our artisans to understand that it is not all mechanical work that we want them to do, but to raise themselves above it, and have the true spirit of an artist ; and let us have our artists and our modellers studying a little more of the mechanical part, so that they may be enabled to follow up the manufacture of an article, and point out to a workman what is wanted. If we attend to this fact we shall achieve a great triumph.

In conclusion let us try to instil into our artisans' minds the great advantages of education. Let them only taste the real pleasure they will derive from it. Let them be made to feel that the benefit will be tenfold to them. If we can accomplish that, there will be very little fear that the English workman will be enabled to take his stand by the side of the continental artisan.

ON TIN-PLATE WORKING.

By EDWIN POOLE,

MANAGER OF TIN-PLATE WORKS, BIRMINGHAM.

AS the appointed representative of the tin-plate workers of Birmingham, tender the Report of my visit to the Paris Exhibition of 86 7. I arrived in Paris on Tuesday evening, August 20th. On Wednesday I presented myself with the recommendation given by the Society of Arts to M. Haussoullier, of the Workman's Hall, who rendered assistance by sending an intelligent interpreter and guide with me.

I spent the entire day in visiting the manufactories and workshops connected with the tin-plate trade, among whom were M. Gagneau's, lamp manufacturer, Rue d'Enghien, and M. Chatel's, railway and ship lamp manufacturer, Rue de Malte. I discovered nothing new either in mode of work or in tools, but I found them using the latest improved tools that are used in English workshops.

Before I proceed to give a description of the articles of the trade exhibited in the Exhibition, I deem it necessary to digress a little, to explain the two divisions of the tin-plate trade (that it may be better understood), viz., the old and the new mode of working. The former mode was to make articles from tin-plates worked by the hammer, or made of many parts; the time and labour in the production of these articles, made it expensive, and withal they were only tin, vastly different to the present, and when finished they were not worth the money they cost in labour, the surface was irregular, the finish was imperfect, and in the process of working, the tin was *erased* from the iron, which was thus exposed to the action of the atmosphere, interfering with the general effect. The raising of tin plates into shape by hand labour is a work of great difficulty, but the old tin-plate workers of Paris and Germany understood the art, and were reckoned expert in this department of labour; thus a dish-cover would be made of a dozen separate pieces. Such was the old way of working in the tin-plate trade. The great change in the trade caused by the new mode of producing, by the introduction of stamping, raising, and shaping by machinery, has given a new feature to the trade and completely remodelled it. Our neighbours on the Continent have caught the idea, and have applied it with determination to those articles that are used by every householder, and thus they stand as rivals to the English manufacturers both in workmanship, quality, and price.

I would here note that, for the introduction of stamping, raising, and shaping by machinery into the tin-plate trade, we are indebted to that practical, persevering, and enterprising man, Thomas Foxall Griffiths, of Birmingham (then the senior partner of the well-known firm of Griffiths and Browett), who patented the application of these principles to the tin trade, producing a multitude of new and useful articles for domestic use, and giving a new impetus to commerce in this department. By the new process a disc of iron is taken, stamped, shaped, and tinned afterwards; uniformity and brilliancy is thus given, the seams are avoided, the labour of cleaning is diminished, emulating and competing with those trades that use the more valuable metals, and thus bringing these highly-finished and elegant useful articles within the reach of the middle and lower classes of society.

It will be well in a few words to mark the progress of this department of commerce in relation to this nation, as well as the others on the Continent. The position that the tin-plate trade occupies in the commercial world makes it a matter of great importance to the community that its progress or decay should be well understood, and the movements of our neighbours should be watched with a jealous eye.

The first specimens of raised iron articles from the flat disc were exhibited at a local exhibition held in Birmingham in the year 1849, which called forth the marked attention of His Royal Highness Prince Albert, who expressed his admiration at the wonderful stampings produced.

Stamping and raising became general in the tin-plate trade, with other improvements, and in the Exhibition of 1851 there was a good display by the English manufacturers of highly-finished articles. The French, Germans, and Belgians became faint imitators, and applied the new principle to the production of the culinary class of goods. The specimens they exhibited were far inferior to the English in workmanship, style, and finish. In appearance they seemed half-a-century behind, but it was not so in the Exhibition of 1862. These said manufacturers from the Continent had made rapid and wonderful progress. They had concentrated their energies on the production of one class of articles, such as are used by everyone. The specimens they exhibited proved that they had retraced their steps, rectified the visible defects, and upon a commercial level they stood side by side with the English manufacturers in this department for workmanship, quality, and price.

With this rapid survey of the past, with its full development of the new principles of force and steam that have produced the great change in the tin-plate trade during the last thirty years, we will enter the Paris Exhibition of 1867, to compare the progress made by our neighbours in this department of commercial industry.

After taking a casual survey, to my great astonishment a difficulty presented itself, which placed me in a dilemma—I found only one English firm of tin-plate workers exhibiting, and they not strictly tin goods, but more to show the art of japanning on tin and iron, viz., Loveridge and Co., of Wolverhampton; and, on the other hand, the manufacturers from the Continent who exhibited had directed their attention to one class of articles, viz., stamped iron culinary articles (tinned), such as are used by every householder in the world, whether

civilized or not. The higher branches of the tin-plate trade not one had dared to enter; therefore the supremacy in this department is left with the English manufacturers; and with pleasure I would here note that there is a will and a determination on their part not only to take but to maintain the lead in this higher department of the trade, in which perseverance, skill, and ability have placed them.

I commenced my labours at the Paris Exhibition on Friday, August 28rd, and continued there three days. The first stall that I visited was that of the noted firm of Japy Frères, of Beaumont. Here there was a good assortment of culinary stamped iron articles (tinned), and also a few specimens of hand-made goods, which were characteristic of the French style. The neatness and the adaptation of the parts gave a finish even to the common articles, and made them "eyeable." I would here note that where neatness can be combined with firmness and durability it is well. The hand-made planished, or bright articles, were very inferior to the English, both in workmanship and finish; the stamped and burnished goods are faint imitations of the English, but will bear no comparison. I here noticed a good nest of iron raisings (bright iron), intended for stewpans, from 6 in. to 16 in. in diameter, and 7½ in. deep. In my opinion, they were good specimens in this department. Considering the world-wide fame of this house, I deemed it my duty to be particular in my inquiry. On the Monday I was introduced to one of the firm, who kindly allowed me to walk over the store warehouses in Paris, which afforded an opportunity of viewing the goods in the bulk, both as regards price, quality, and workmanship. Upon this I shall remark when I have done with the Exhibition.

De Pruines, Plombières (Vosges), exhibited the same class of articles as Japy, with the addition of spoons and forks, cut from sheet-iron, and nicely finished. The tinning was excellent.

Girard, Rue Lafayette, Paris.—On this stall the first object which attracted my notice was a cylinder 6 in. diameter and 10 in. deep, raised from a flat disc of iron. In the common French tin-plate goods a large amount of ingenuity and skill is displayed; and, for the purpose for which they are intended, they are quite equal to the English. The planished goods are inferior. Here are exhibited tin goods, japanned; but with the English they will bear no comparison.

Karcher and Westermann, forgers and manufacturers, Ars sur Moselle.—Stamped raised culinary articles (tinned). The tinning was inferior. There was a good display of iron moulds made in one piece, all but the pipe in the centre. These are cleverly raised, and then hand-shaped; stamped kettles and drinking-cups (in nests), the largest 6½ in. in diameter, and 6½ in. deep. This is a progressive step in this department.

Lalance and Gronjean, Pearl-street, New York, U.S.—The same class of culinary articles as the French, both in finish and quality.

F. Russ, Graz, Styria, Austria.—The patterns are similar to the French, made from Bessemer's steel; very cheap, finish inferior, and tinning bad.

Philippo and Cetto Ironworks, Stromberg, Prussia.—From the specimens here displayed the principles of raising are well understood. All

culinary articles marked progress in workmanship, and were well tinned and finished. The articles coated with glass were good; a set of stampings, from 4 in. to 18 in., very good; raised iron bucket, 10 in. diameter and 10 in. deep, from a flat disc—wonderful raising.

Caroline Ironworks, Oberlahnstein, Nassau; and Dahm, Knoedgen, and Kirschner.—The articles exhibited by these two firms are all of the same class as above, equal in quality and finish.

Delloye, Masson, and Co., Belgium.—The first object that merited attention here was a raised cylinder, 3 in. diameter and 10 in. deep, from a flat disc of iron.

Tremouroux Frères, and De Burlet, Brussels.—Here was a stamped bucket, 10½ in. diameter and 11½ in. deep. My decided opinion is, that the articles exhibited by these two firms are the best of the class in the Exhibition. The finish and tinning are excellent, equal to anything of the kind that I have seen in England. I am told that these two cases have been got up solely for the Exhibition. Be it so; the fact is still the same—they have the secret of success if rightly used. The burnished tinned-iron articles were the best I have seen in Paris; the enamelling with glass on iron was superior, and the printing on the same was good; in short, the plates, basins, jugs, &c., were almost equal to china in appearance.

With these I have finished at the Exhibition; and a few words in conclusion will close the report of my labours.

I have failed to discover any new idea, much less to see a new principle developed. There is not a new article exhibited in the tin-plate trade but what was to be seen in the Exhibitions of 1851 and 1862; and even the deep raisings that I have noticed are not to be compared with those exhibited by Griffiths and Browett, of Birmingham, in the Exhibition of 1862, for difficulty of raising and peculiarity of shape. The question will arise in the minds of English visitors, "What is the reason that the manufacturers of the Continent have directed their attention and concentrated their energies to the production of one class of articles, to the omission of everything else?" I admit that the goods made are of every-day use, and of the most practical nature; but why they have done so I cannot tell.

Having seen the productions, knowing the demand, and also knowing that our leading merchants are not only having these goods imported into England but exported over the world, it leads me to compare the prices of the articles thus manufactured by the English and foreign competitors. I am compelled to acknowledge that there is a class of goods manufactured and sold by our neighbours which the English cannot do; therefore they carry the market with them for cheapness. Any one who walks through the Exhibition in this department must mark the fact that only those articles have been produced which are of great demand, of easy make, requiring little skill, and that can be chiefly done by machinery. I endeavoured to find out the secret, and solve the question of the cheapness of this class of goods; but, lacking time and opportunity, and being attacked with illness, I was prevented from succeeding to my satisfaction. It is sufficient for me to inform you

that I went into the subject of material and wages both in and out of Paris.

As regards the cost of material, I found the market price of rubber iron a little dearer than the English, block tin a shade cheaper. The secret lies not in the material. I found there is great attention paid to the use of it. I was surprised to find that, with certain articles, three qualities of iron were used in their production, and care was taken in working up.

Wages I found to vary according to the place. Generally the work is done by the piece, and not by the day, in Paris. If by the day, as in the lamp trade, sixty hours per week is the settled time. The wages that are paid average from five to eight francs per day. In the tin-plate trade the hours of labour are sixty-six per week, and the wages that are paid average from four and a-half to six francs per day. The wages paid in the last department are somewhat less than are paid to good workmen in England, but still not sufficient to make the difference in the price of the articles produced.

My interview with the firm of Japy and Co., who are probably the largest employers of labour in France (as you are aware, they employ 6,000 pair of hands, and hold the supremacy in this department of commercial enterprise), led me to discover that labour with them is vastly different to what it is in Paris. The hours of labour are seventy-two per week in summer and sixty-six per week in winter. The wages that are paid average from two to three francs per day. These manufacturing colonies are removed hundreds of miles away from Paris life and influence. The mode of living is simple, and the conveniences of life are studied by the proprietors, and juvenile labour is brought into the market; in short, these colonies of industry are kept far from the baneful effects of trade combinations, which prove so injurious to the lasting interest of the working man. The fact as stated above reveals the secret why the English find it so difficult to compete with foreigners in price in this department.

In Paris it is evident that there exists uneasiness in the labour market at the present time, for it is a singular fact, that not in any workshop that I visited was a juvenile employed. I inquired the reason; the answer given was, that the men objected to youths being brought into the trade, because it would have the tendency of reducing wages. I had a conversation with a large employer of labour (whose works are in the south of France) upon this subject, and he stated the uneasy feeling was spreading among the workmen in the district, and he feared ere long it would reach the farthest extent of the country.

I find that in the lamp trade, there is a trade Society; but it exercises moderate rule over the workmen, each shop being allowed to settle its own price, according to circumstances. The Society objects to youths being taught the trade. In the tin plate trade, they have their trades' meetings, but no organized Society, that I could find; the workmen feel anxious that one should be formed upon the same basis as the English.

As regards the education of the workman of Paris, I can say but little, my time being limited, but from the information I received, both from employers and foremen, and also from my interviews with the workmen

themselves, I am forced to the conclusion, that they are not better informed than our own workmen in our large towns ; but there is a politeness that is not found among the English workmen. From all that I could learn, I am convinced that not more than one-third are proficient in the rudiments of education ; the foremen I found to be an intelligent class of workmen.

There are other topics that I might have introduced into this Report, viz., the division of labour ; the habits of life ; the love of pleasure ; and the kind of amusements of the workmen of Paris ; but these subjects have little to do with English life and labour, therefore I will forbear for the present.

LABOUR-SAVING MACHINES.

By HENRY FOWLER,

FOREMAN ENGINEER, BIRMINGHAM.

IN presenting my Report upon labour-saving machines, &c., shown at the Paris Exhibition, and those I saw in the manufactories visited, I beg to state that I was unable to find several machines spoken of in the catalogue; but, on the other hand, I found many not alluded to. I would also beg to remark, that through the difficulty I had to contend with, in not being familiar with the different languages, when certain new applications of machinery wanted describing, I am unable to give so full and detailed a Report upon some machines as I otherwise should have done. It will be observed that I have classified the machines irrespective of their country, thinking this course preferable to treating on the machines of each country separately.

Machines for Screwing Iron Tube, Bolts, Nuts, &c.—The best of these machines are contributed by Morris, Tasker, and Co., Philadelphia, United States. They have quick running back motion, similar to an ordinary iron planing machine—viz., bevel wheels and pinions of different proportions for the forward and backward motion. They take up but little room. Proportions and workmanship excellent.

L. Hugede (Paris) exhibits a screwing machine, well made, with an improvement consisting of a spiral chuck on the back end of the hollow mandril. This enables the work to be fastened or loosened without stopping the machine.

D. Poulot and Bricaire (Paris) also send a screwing machine. Quality of work, quite equal to English.

Theodore and Frederick Bell, of Lucerne, have a screwing machine. Construction good, but unnecessarily strong; workmanship ordinary.

Boubey (Paris) sends a screwing machine, with fast running back gear, but very heavy and clumsy.

J. F. Cail and A. Halot and Co. (Brussels) exhibit a screwing machine. Design and workmanship very ordinary.

When I visited the brass foundry of Lacarrière, Rue de l'Entrepôt, Paris, a tube screwing machine was working with the old-fashioned dies, taking two and three cuts to each piece of pipe, and therefore a corresponding amount of time. No other machines but ordinary power lathes were used here, except two small machines for making gas jets, which took quite as long as making them by hand. The vices used here were worthy of notice, the height from the box to the

jaws being considerably more than in those commonly used for the same work in England. This is a great advantage where great pressure is not required.

Darling, Browne, and Sharp, Providence, Rhode Island, United States, exhibit a screw-making machine, suitable for gun or lock work. It consists of several cutters, fixed horizontally in a disc, on the top of a saddle or slide rest. The work being fixed in an ordinary hollow mandril lathe, the saddle is brought up by a lever; No. 1 cutter then roughs down the iron; the saddle is then brought back, and the disc moves round one division; No. 2 cutter cuts it down to the exact size, No. 3 cuts the head, No. 4 holds a die for threading. This die-holder has an ingenious arrangement for preventing the screws being cut too far up. The outer collar, which holds the die, is held by a clutch which, when properly set, comes out of gear when it has travelled to the given distance; however long the lathe may keep going the die rotates with it, thus preventing either the die breaking or the work being spoiled. Another clutch is fixed in the opposite direction, to catch when the machine is reversed. No. 5 finishes the point. These screws are all exactly one size and length.

The gun machinery exhibited consists of the following:—A barrel-boring and turning machine, by J. Jasper (Belgium); very roughly constructed.

F. G. Kreutzberger, Quai Impérial, Puteau, Seine, contributes several good milling and rifling machines; also a screw-making machine similar to Darling, Browne, and Sharp's. These machines are all well designed and finished.

The arsenal at Vienna also sends a rifling machine, very well made.

Darling, Browne, and Sharp also exhibit a very excellent universal milling machine, for making cutters for gun or lock machinery, fluting taps, borers, drills, &c., to any required spiral, either taper or parallel. The construction and workmanship of this machine are of the very best.

Screw Presses, Drop Hammers, Olivers, &c.—These kinds of tools are well represented by most countries. Louis Deny (Paris) sends a screw press with steam power applied. A large wheel is fixed on the top of the screw, instead of the ordinary lever and balls, the periphery of which is covered with leather. This is driven by a horizontal shaft, over the centre, carrying a vertical disc on either side of the wheel, at the will of the workman, who connects them with the wheel alternately, by means of a small lever, and thus reverses the motion, stops being so placed on the wheel as to strike against strong springs fixed on the framing, in order to prevent the wheel travelling too far.

Balancier and Mouton (Paris) also exhibit a similar press.

F. G. Kreutzberger also sends drop hammers and large rotary shears, capable of cutting $\frac{3}{4}$ in. iron plate, with an adjusting cramp or vice for cutting circles of any diameter. A great number of these shears are shown by different firms, from eighteen inches to $\frac{3}{4}$ in. in diameter.

Massey and Openshaw, Manchester, send a very compact steam oliver; a steam cylinder being placed between the anvil and the fulcrum of the lever, the blows are more rapid, and can be made much heavier in consequence of the steam acting on both sides of the piston.

An excellent self-acting steam striker by Davies, of Crumlin, near Newport, Monmouthshire; this hammer is intended to stand in the centre of three or four anvils within the radius of its arm, it easily turns in any direction, the hammer in itself also turns to any angle in order to strike obliquely or horizontally; the communication with the hammer is by a treadle in the front of each anvil, and according to the pressure of the foot, the force of the blow is regulated. This hammer is applicable to any kind of smith's work requiring a striker.

The only nail cutting machine exhibited is by Wickersham, Boston, Massachusetts, United States. The nails cut by this machine are from a sheet of iron any width, an advantage which is obvious, as the nails can be made with the grain of the iron longitudinally. The nails are chisel pointed, being cut one out of the other, as shown in the wood-cut (Fig. 1);



Fig. 1.

they are produced with great rapidity, $2\frac{1}{2}$ in. nails about 1,200 per minute. These machines are very simple both in construction and action, the nails requiring no heading; the machine exhibited had sixteen pairs of cutters or shears placed at slightly different angles alternately, the first stroke of the shears cut one side of the nails, the sheet of iron then advances the width of the nail, at the same time moving transversely the length of the nail; this movement brings the previous cutting under the other shears and produces the nails, the first set of shears cutting one side of eight more at the same time. This machine produced eight $2\frac{1}{2}$ in. nails at each stroke, and was running about 150 strokes per minute.

Barrère and Caussade, Rue de Rennes, Paris, and another exhibitor send pentagraph machines for copying medallions or figures in exactly the same proportions, increasing or decreasing the size or relief; these machines were in full operation at the extensive statuary works of Barbédienne, Rue de Lancry, Paris. One large machine was working by steam power, and is entirely self-acting; these machines must of course be made with the greatest care in the fitting, to ensure accuracy in their work; they might be applied to die sinking for buttonwork, &c.

Wood cutting machinery is well represented by most countries. Messrs. Powis, of Millwall, also Worssam, of Chelsea, make a good display, but I remarked nothing new.

A. Ganz, Bude, Hungary, exhibits a massive dove-tailing machine; this consists of two cutter heads revolving at different angles, one cutting one side of the dove-tail and the other the opposite side, the bottom being squared out by a sort of mortising chisel working on the same machine. This machine cuts both dove-tails (tenons and mortises) at the same time, the pieces of wood being fixed at right angles to each other, (one vertical, the other horizontal); this machine produces good fitting dove-tails, but very rough.

An excellent dove-tailing machine had just arrived from America;

this consists of two discs geared into each other with bevel wheels attached to them ; these discs carry each a circular saw, made in segments, with a returned edge diminishing off to nothing (Fig. 2), and as the width of the saw diminishes with wear, the segments are moved round one division, and a new wide segment put in ; the relative position of the discs with the work is altered according to whether tenons or mortises are to be cut ; it will be seen by the accompanying woodcuts, that if the saws are placed in the position of Fig. 3, they will cut the right and left sides of two tenons at the same time, and as the work advances on the table, the tenons previously cut by the left hand saw come in contact with the right hand one, and the piece between the two tenons falls out. When the mortises are to be cut, the position of the saws is altered 90 degrees, as shown in Fig. 4. This machine cuts the work very clean.



Fig. 3.



Fig. 4.

Dupriez, Rue Traversière, Paris, exhibits a band saw for cutting at any angle ; this is done by the framework that carries the top wheel moving on the shaft ; that of the bottom wheel, by means of a quadrant rack and pinion, as Fig. 5. It will be seen that the angle of the saw may be easily altered, even while the saw is working, thus enabling the operator to cut any twists, such as hand rails for staircases, timbers, boats, &c.

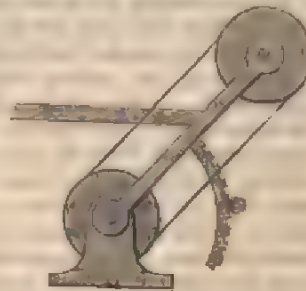


Fig. 5.

On visiting the Orleans Railway Carriage Works, I noticed some excellent machines for sawing, planing, mortising, and tenoning, all made in Paris, well proportioned and finished. Here, as also at the other factories I visited, I noticed the almost entire absence of boys. I was informed there were only about ten or twelve in all, and they were over fourteen years of age. About 1,500 men were employed. There was an excellent dining-room, with every facility for cooking, or meals provided at a very cheap rate ; also, an extensive wine-cellar, wine being sold to the employés at a much cheaper rate than it could be procured out of the manufactory ; a large lecture and schoolroom, for the use of the children of workmen. Here also the dirty oil and grease from the engines and machines is converted into soap, and used in the factory, or sold to the men at a very cheap rate.

Washing and mangling machines are not shown in great numbers. The best of these seem to be those exhibited by Thos. Bradford and Co. One of the machines shown combines washing, wringing, and mangling. The ordinary springs for pressing upon the rollers are substituted by a lever and weight, an obvious improvement, as they require no adjusting

for the pressure, or thickness of clothes put through them, and the machine is not so likely to get out of order.

Sewing machines are shown in great numbers by France, Belgium, America, and England. I did not notice any new feature in these machines. The workmanship appeared to be about equal.

Sylvain, Dupuis, and Co., Paris, exhibit a very complete set of machines for making boots and shoes. The uppers are first cut by cutters of the required shape; they are then taken to the sewing machines, and put together; from these they go to the lasting machines. The uppers and lasts are placed, sole upwards, in a frame that easily turns in any direction; from the top of this frame are suspended six or eight pairs of pincers; these are brought down and fastened to the edge of the upper leather; these pincers are then separately connected with cords that communicate with the foot of the operator, who, by the pressure of the foot, tightens the leather to the required tension; nails are then put in between the pincers, to secure the work in the usual way; the pincers are then loosened, and the work taken to the soleing machine, where the soles and heels are screwed on; about an eighth of an inch of the screws is left prominent, where they have been held by the machine; these are cut off almost instantly by means of a small pair of shears, running at a great speed; the shoe is then taken to an emery-wheel, where the soles are finished off. Boots are begun and finished by machinery, worked entirely by young women.

Machinery for making felt hats is also exhibited in the French department. This consists of a cone about two feet in diameter, and the same height, with the top rounded, made of sheet copper, perforated with very small holes all over. This cone is placed upon a table revolving slowly, the air being exhausted from under the cone; at the same time the felt is blown on, by means of a fan, at any part of the cone to which the workman directs it. There being a partial vacuum under the cone, the pressure of the atmosphere keeps the felt on while it is on the table; it is then covered with wet cloths, taken off the table, and immersed in a solution of some kind for a few seconds. It is then stripped off the cone, rolled upon an iron table heated by steam, then put into the presses, and blocked to the required shape.

The very limited time at my disposal for the inspection of iron safes renders it impossible for me to give a detailed description of them. Taking a cursory glance at them, I am of opinion that the fact of Herring's (America) burglar-proof safe (so called) being placed inside another safe renders it more difficult to open than any other; but, as far as the construction or system of putting safes together is concerned, I think Hobbs' is a nearer approach to being wedge-proof than any other. The plan they adopt is, the corner being formed of a very strong iron tube, a groove is planed the whole length of it, about an eighth of an inch deep, to exactly fit the thickness of the plate; holes are then mor-



Fig. 6.

ticed through to receive the dovetails of the plates. (See Figure 6.) When the tenons of both plates are in their place, the tube is filled with molten iron, which, when cold, is as hard as hardened steel. Several French and Belgian firms show some beautifully-finished iron safes. These are doubtless fire-proof, but, I imagine, have no pretensions to being burglar-proof.


RAILWAY CARRIAGE AND WAGGON BUILDING.

By BENJAMIN WHITEHOUSE,

RAILWAY CARRIAGE BUILDER, BIRMINGHAM.

ENGLAND has developed the railway system to its present altitude while Continental nations looked on, not being alive to its efficacy and power till within the last few years. They have watched the rapid progress made in this country in the manufacture of railway carriages, waggons, and rolling stock generally; they have visited our manufactories, and seen the different arrangements; they have inspected the machinery, with its various improvements and adaptations; they inquired into our method of working, and have taken advantage of the information supplied; they have entered into competition with us as a nation, with these advantages on their side—profiting by our experience, adopting the good in our arrangements, and avoiding our irregularities; by adopting the best machines, with the latest improvements, and arranging them in the best possible manner; and they have not only purchased them, but have seen they are used to the best advantage.

On the other hand, we have experience on our side, a system thoroughly developed, have acquired a prestige and a fame which we cannot lose if we are prepared to march onward with the times, and do not allow ourselves to be misled by the idea that no other nation has any chance of competing with us. A few years ago, England supplied the world with railway rolling stock without fear of competition, and very few firms were able to do it; now there are more than double the manufacturers at home, and almost every nation on the Continent has started in the enterprise. Some few of them have made very rapid strides; for instance, Belgium, France, and Russia. They bid fair to equal, if not to outstrip us in the race. They are able to supply the demands of their respective countries, and to compete with us in manufacturing for other parts of the world. It must not be forgotten that while the supply has increased, the demand has also increased, although, I believe, not in proportion to the means of supply. In the Exhibition not a single railway carriage or waggon was exhibited in the British Department (three models being excepted), while France, and other Continental nations before mentioned were well represented. Her Majesty's Postmaster-General exhibits three beautiful models of railway mail-carriages, illustrating the arrangements adopted by the Post-office authorities of

Great Britain, and also a model of a mail-coach, in use before the introduction of railways. The latter is believed to be as perfect a model as was ever made of an English mail-coach. It was built in 1836, by Mr. Harris, a coach-builder, of London, at a cost of 57*l*. It shows how great a contrast there is between the past and present modes of conveying the correspondence from one part of the country to the other, and also how greatly the correspondence has increased to require three mail railway carriages to every mail-coach in use at the time when railways were first constructed. The models of mail railway carriages are correct representations of those in use on the London and North-Western line of railway, and were built by that Company at their works at Wolverhampton, under the direction of Mr. Bore, their Chief Superintendent. They are divided into three sections, and are technically known as—(a) Railway Post-office; (b) District Sorting-carriage; and (c) Tender. The three carriages are connected by a covered passage over the buffers, thus enabling the officers employed in them to pass from one carriage to another when the train is in motion; the entire length of carriages, when thus joined, being seventy-seven feet. The buffers are solid on one end of each carriage, those on the other ends being of the ordinary description, which allows the carriages to be brought closer together, and limits the expansion and contraction of the buffers to half the usual distance. It thus makes the passage from one carriage to the other shorter and safer. The sides of the carriages turn under, and are covered with panels, which are divided into sections, mouldings being fixed where required. In the centre of one side of each carriage is a pair of doors with sliding glass frames. Those belonging to carriages a and b are hinged to the standing pillars, and open inside of body; those belonging to carriage c slide on rollers along the inside of body. On each side of the last named doorway a part of the apparatus is fixed for receiving and delivering mail-bags at those stations at which the train does not stop. On the journey from London to Carlisle the apparatus is brought into use twenty times, which does away with as many stoppages at the smaller stations. The receiving part of the apparatus consists of a net fastened to the side of the carriage, into which fall the mail-bags that are placed at the small stations for delivery as the train proceeds on its journey. The delivering part of the apparatus consists of a machine in the shape of a small crane, on which the mail-bags to be delivered are hung, and, as the train passes, the reception-bag at the small stations receives its load without the train stopping. When the apparatus is not required, both parts can be fastened to the side, and take up very little room. The ends of the carriages are framed and panelled, to correspond with the sides; a doorway is made in each end, close to one side, to allow the passage to be formed from one carriage to another (previously referred to); each end door opens inside of body; bottom quarter panels are shown longitudinally on the sides and transversely on the ends, all being of an equal width, with belt panels above them in the same direction; the top quarter panels are placed perpendicularly on both sides and ends; the roof is of ordinary description, but not of the usual shape, thus ; it starts with a quick curve from each side, with a gentle rise to the centre. Light, and part

of the ventilation, are obtained through the roof. Four raised lights are fixed to each of the roofs, with sliding ventilators underneath them; five lamps are also placed in each roof, for lighting purposes at night, and two in the side of carriage *a* for warming wax, &c. The interior is fitted up with a counter along one side of each carriage, on which the letters and newspapers are sorted. The space above the counter is divided into small compartments, for the reception of letters, &c., when sorted, and a few drawers for the use of the officials. A portion of the counter, compartments, and drawers in carriage *a* are fitted up with sliding shutters, for the protection of registered letters; the opposite sides of the carriages are plain, in which hooks are fixed to carry the mail-bags. The timber used in the construction of these carriages is as follows, viz., oak for framing of bodies and underframes, mahogany for panels and mouldings, and deal for floors, roofs, and fitting up the insides. The general appearance is very good, and well proportioned.

Travelling Post-office as used in France.—This is a noble-looking carriage, and differs in several important points from those in use in England. The body is 22 ft. long and well proportioned. Each side of the carriage consists of one end quarter 15 ft. 3 in. long, one door, 2 ft. 7 in. in width, and one end quarter, 4 ft. 2 in. long. There are four sliding glass frames, one in each door, and one in each large quarter. The quarter lights are the same distance from one end of the body as those in the doors are from the other. Each quarter light represents a door, which gives an appearance of four doors instead of two to each carriage. The lights in the doors and quarters are straight at bottom and semi-circular at top. The top rails of the glass frames are straight on the outside edge and parallel with the fence-rail when the light is down, but when up show the same all round the light. A small letter-box of ordinary description is fixed on the inside of each door, with a small wooden flap on the outside, which is closed and fastened inside, unless opened specially for the reception of letters. The body is framed of oak, and turns under on the sides. The whole of the framing is level except the corner pillars, which show the mouldings solid. The panels are made of Bessemer steel; they are cut to pattern, hammered true, and then fastened on with panel-pins. The bottom sides and end bars have a large hollow worked on the bottom edge, which adds to the appearance but takes away the strength. The moulding, which is planted on the edge of the bottom sides and end bars, forms a sweep at each corner of the body, on the sides and ends. It is the same size as shown on the corner pillars, and mitred in about 12 in. from the bottom. The mouldings planted on to form the panels on bottom quarters and doors are $1\frac{1}{2}$ in. by 9-16 in.; the mouldings planted on to form belt panels, and to show the $\frac{1}{2}$ in. round the lights on quarters and doors, are $1\frac{1}{4}$ in. by 9-16 in.; both sizes have a hollow worked on the face edges. The doors are lap-plated all round with one kind of plate. The inside is fitted up with a counter along each side, and across both ends; the counters at the doorways take the shape of a quarter of a circle, and are 2 ft. 10 in. high, with a beading $2\frac{1}{2}$ in. high running round the front; the width of the counter with beading is 2 ft. A nest of holes is fitted up across both ends, and at each corner on the sides, and

also one in the centre on each side of the body. Each nest is raised above the counter about six inches, and forms an oblong space along each side and across both ends, which leaves the top of the counter clear the whole width. The space underneath the counter is divided into sections by partitions placed at equal distances from each other. Shelves are placed in the centre of partitions and form each section into two compartments. Drawers 4 in. deep are placed underneath the counter, and above the shelves two drawers are made 2 ft. 9 in. deep, and slide on iron bars which are let into the floor. The roof is of ordinary shape and construction. Eight lights are raised about six inches above the roof, and are made to open and shut; curtains with spring rollers are fixed under each light; a timepiece is fixed in one end, near to the roof; a stove, chairs, and stools are also placed inside for the use of the officials. A circular ventilator is fixed in the roof, which can be opened and closed at pleasure; a covering in the form of a lamp protector is fixed over it outside the roof. The roof, casing, and bottom boards are oak $3\frac{1}{2}$ in. wide; the stepboards are deal $1\frac{1}{2}$ in. thick; the same material is used for the short tread-steps instead of iron plate. The iron work is light and well finished; the guards are **W** pattern, the wings extending about 2 ft. on each side of the guides. The door handles are not fitted into ordinary locks, but have a spring catch attached to them. They are of the ordinary length, but rather wider; an oval shape, not regular, showing a bold front, but of common appearance. The commode handles are plain, but look well; lap-plate of ordinary size and description. Door hinges large, strong, and well proportioned. Bottom sides 6 in. by 4 in.; end bars 5 in. by 4 in. There are nine intermediate bars $3\frac{1}{2}$ in. by $2\frac{3}{4}$ in.; standing, corner, and intermediate pillars 3 in. thick; door pillars 3 in. by 4 in., hollowed inside; underframe made of oak, sole bars 10 in. by 4 in., headstocks 10 in. by 4 in., cross-bearers 10 in. by $3\frac{1}{2}$ in., centre cross-bearer 4 in. by 4 in., no longitudes; two diagonals, 5 in. by $2\frac{1}{2}$ in., are framed level with top of underframe, from one corner to the other. Buffer spring bearers are made of iron 2 in. by $\frac{3}{4}$ in. The safety-chain rod goes through headstocks and cross-bearers. Painting.—Bottom quarters lake, with a fine red line inside of mouldings; top quarters black, with five sham louvres; blinds on each side, representing oak framing and mahogany louvres; the face of all the mouldings black; both hollows are gilt. The painting and varnishing are well done, but the effect was spoiled by the pins in the moulding bulging the paint. From this description of the French post-office, it will be seen that it differs from those of the English in these respects—1st. There are no provisions made for receiving or delivering mail-bags while the train is in motion; 2nd. There is no means of passing from one carriage to another while the train is proceeding on its journey; 3rd. All the space is economised by the carriage being fitted up all round, above, and below the counter; 4th. Each carriage is complete in itself.

The Coupé-Lits is a fine specimen of a first-class carriage, belonging to the Great Eastern Railway of France. It is framed of oak, and divided into three compartments, two ordinary first-class and one sleeping compartment, which contains three beds. Each side turns under $4\frac{1}{2}$ in.;

the coupé end is rounded at the corners, the corner pillars at the end being lightened off about 2 in., and hollowed out at bottom, which makes the end appear to turn out 2 in. There are four glass frames and blinds at this end of the body, two flat ones and two circular, to suit the rounded corners. There are double grooves in pillars for glass frames and blinds, D lights, for the quarters, rather wider than usual, and a good shape. The half-inch shown round the lights is hollowed instead of rounded. All the pillars are lightened off at bottom for panels and mouldings; the bottom edges of bottom sides and end bars are hollowed about $\frac{3}{4}$ in., a $\frac{1}{4}$ in. bead being worked on the top edge of the hollow; the panels are brought down to the bend; the panels are made of Bessemer steel, and secured with pins; size of mouldings, $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in. with a hollow worked on each edge. The sweeps are cut out the same size, and are worked to correspond. A moulding, $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in., round on top edge, and hollowed underneath, is fixed above the lights, and is continued round the body. Between the moulding just named and the cornice a plain panel, without either ventilators or bonnets, is shown round the body; the glass frames are made of mahogany; the insides are the same shape as the lights, but the outsides are square to allow them to slide in the grooves. The blinds, also, are made of mahogany, each blind being fitted up with four raised panels, made of bird's-eye maple, the object being to make the sleeping compartment as private as possible. The trimming is exceedingly good as regards materials, general arrangement, and good workmanship. Drab cloth, with lace to match, is used for the backs, cushions, divisions, and elbows. Each seat in two of the compartments is divided into two parts by a double elbow rest; the elbow is made movable by one end working in a socket, assisted by a spring. The divisions have a neat appearance; they are not so wide at the head as those in use in this country, nor is there a portion of it across the seat to support the elbow rest. The middle elbows are an oval shape, and are divided into two sections by a piece of wood being fixed in the centre of them, which stands up above the ordinary stuffing about 2 in.; the backs and side quarters range with top of quarter lights, and are finished with a piece of broad lace being placed above them. The glass strings for doors are made of broad lace, and look well; those of the quarters are made of webbing, of good quality, yet they look poor; the net rods are made of round iron, $\frac{3}{4}$ in. in diameter, the ends being bent round, and forming a bracket at each end. The other brackets are made of the same material; both rods and brackets are covered with broad lace, the same colour as the nets. Hat cords or straps are made of brown leather, $\frac{3}{4}$ in. wide and $\frac{1}{2}$ in. thick. A brass stud, with loop, is fastened to each end of them, and screwed to the roof. The compartment at the coupé end of body is much larger than either of the others, and the doors are placed near to the end, which leaves a great portion of the space on one side of the doorways. This is subdivided by a second partition being framed across the body, which makes the compartment appear much smaller, yet leaves a space sufficiently large for a comfortable seat across the compartment. This also is subdivided into three seats, in the shape of easy chairs; the back of each chair is a semicircle at the top, the highest

part being 3 in. below the moulding under the roof; the top part of each back is trimmed with tufts, the lower portion being formed into plaits. There are seventy tufts in each back. The space between the two partitions is divided into three sections; each section contains the back of a seat, which, when pulled down, forms a bed, with pillow and covering complete. The back and seat are lowered by one movement, the underpart of the seat resting on the floor, while the back folds on to the top of the cushion. Thus the bed is formed, and travellers wishing to sleep can undress and retire for the night with the same privacy as if they were at an inn. A urinal is provided, placed in an iron box fixed in the floor for its reception. The box is enamelled inside, and has a hole through the bottom. The lid is made of copper, and covered with a piece of carpet, the same as the other parts of the floor. A mahogany shelf is fixed across the end, a little below the lights, and also three small shelves are fixed to the end, about one foot above the floor, to be used as footstools. Two mirrors are also placed in the same compartment. The seats have cane bottoms for the cushions to rest upon, instead of springs. The space between the trimming and the roof is veneered with bird's-eye maple; mahogany mouldings are planted on to form them into panels. A triangular moulding, with a hollow on the face, is fixed in the corners underneath the roof, round each compartment; the same is veneered and polished. The roof is cased underneath the hoop-sticks, and is veneered with bird's-eye maple. There is no cross-banding or stringing, but it is divided into sections with mahogany mouldings of various sizes. India-rubber pads, in iron frames or sockets, are screwed on the mouldings of the doors, to catch against the commode handle. There being no door-stops, the glass rests are of the ordinary make, with india-rubber nailed down in plaits for pads. The glass frames are very light, being only half an inch thick. The glass is thin, and of the commonest description, being similar to our common window glass. The door-handles are very light, misshapen, and badly finished. The commode handles for doors are longer than usual, and are straight down. They are bent into a pleasing shape, with a shoulder at each end, and are made of three-quarter brass rods, with bolts and nuts complete. The commodes, which run along the sides, are made similar to and of the same material as those for the doors. Latches for the bottoms of the doors are of the ordinary size and make; hinges are very light and common; iron-work is light, but well finished. The guards and stays, scroll-irons, safety chains, screw couplings, and draw bar hooks, have a very neat appearance. Painting.—The bottom quarters lake, top quarters black, the hollow on the mouldings are gilt, and relieved with a fine red line; the ends are painted, to represent the mouldings to form the belt panels, the upright mouldings being brass, $\frac{1}{4}$ in. by $\frac{1}{2}$ in.; the good effect is spoiled by the pins in the wood moulding on the side bulging the paint. Bottom sides, 5 in. by $4\frac{1}{2}$ in.; end bars, 5 in. by $4\frac{1}{2}$ in.; five intermediate bars, 4 in. by $3\frac{1}{2}$ in.; deal bottom boards, 4 in. by $1\frac{1}{2}$ in., and placed longitudinally; underframe soles, double I iron, 10 in. wide by $1\frac{1}{2}$ in.; top and bottom headstocks, oak, 10 in. by 4 in., without hoops to protect the ends; three cross-bearers, 10 in. by $3\frac{1}{2}$ in.; end longitudes, $7\frac{1}{2}$ by $2\frac{1}{2}$; end diagonals, 4 in. by $2\frac{1}{2}$ in.

J. Vidart exhibits specimens of carriages of two stories, with low underframes, for branch or short railways, uniting the three classes. First story is divided into four compartments, two first class, one second, and one third class compartment; the second story consists of third class only. It is an attempt to economise labour, capital, and materials. It does, to a certain extent, accomplish the end in view, but it does so to the discomfort of the passengers. Both stories are very low, close, and confined, as there can be but very little air to breathe, unless the glass frames are put down, and open carriages made of them. The bottom story is about 5 ft. 6 in. high, while the top story is only 4 ft. 6 in. The first class are fitted up with one seat only in each of them, while the second and third classes are fitted up with two, which certainly makes it more comfortable for the first class passengers than for either of the other classes. Two pairs of stairs are fixed at each end of the body, for the use of passengers who wish to ride in the second story. The first class compartments are at each end of the carriage, and are trimmed with drab cloth. A shelf is fixed across each end, and two looking-glasses are placed above it. Blue curtains, with spring rollers, are fixed over the mirrors and door-lights belonging to first and second class compartments; curtains for quarter lights in first class slide on brass rods at top, and on corded lace at bottom; the roof is covered with cloth, and forms one level surface; the back seats, nets, and rods are similar to those before described. The divisions are made stronger than usual, both top and bottom, being $1\frac{1}{2}$ in. thick. The bottom part under the elbow is covered with cloth, and not varnished or polished, as is customary in England. The middle elbows are in the shape of an oval, and are trimmed with two pieces of cloth instead of one; the one piece lapping over the other. There are four tufts on the top of each elbow. The second class compartment is trimmed with blue cloth; the backs are full size, and the side quarters are plain, but well stuffed; the curtains for quarter lights slide on iron rods at the top and corded lace at the bottom. A common rug is placed across the compartment, on the floor; the partitions are framed together, and show four panels above the trimmings; the lifts for first class glass frames, are a piece of broad lace sewn on to a ring about two in. in diameter, which is also covered with lace; the bottom lift consists of a piece of ivory, being screwed on to the bottom rail. The lifts for second and third class are pieces of leather fastened on by a brass plate being screwed on to them. They are very common; the glass frames are thin, and screwed together instead of being wedged; the screws are put in from the outside, which gives the glass frames an old appearance. The first roof and second story is supported by arch rails being placed over the partitions, and four hoop-sticks, 2 in. by $1\frac{1}{4}$ in. being placed at equal distances between them in each compartment. The third class compartment is of the ordinary description. The upper story consists of one third class compartment, with a door at each end and a passage down the centre, with short seats on both sides of it. They are formed for passengers to sit back to back, and are made very light; the seats are shaped and supported by iron brackets, made of small angle iron, and covered with thin boards. In the second story of the

other carriage the shape of the seats consists of sharp curves, and they are covered with strips of wood instead of boards, which altogether makes a very easy and comfortable seat. The roof is shaped and supported by small angle iron, bent into the shape required, which has a very light appearance. The furniture is light and common. The outside of the carriage does not recommend itself in any particular.

J. B. Fell exhibits a special carriage for crossing Mont Cenis. It is a small railway-carriage, about the size of a street railway-omnibus; the framing for sides of body and seat is very light, the outside framing and panels are teak, but oak is used where it can be covered. It is constructed with a door at each end of body, with a passage through the centre, and a platform for the guard at one end; there are five lights on each side of the body, with round corners at the bottom, and straight on the top, the sides turn under about $1\frac{1}{2}$ in., the bottom quarter panels are in two widths, with belt panel four inches wide placed above them; the end is divided into three sections, two end quarters and one door in the centre; the doors slide on rollers at the top and bottom, and work inside the body; there are no lights at the ends, either in the doors or quarters. The interior is fitted up with a seat along each side, which are divided into four sections each, by elbow-rests being placed across them, the elbows being similar to those before described; it is trimmed with drab cloth, and has a neat appearance; the under-frame is low, with four wheels under it, rather under the ordinary size; there are four horizontal guide-wheels acting on a central rail; each break is applied separately, though both of them can be used at the same time; one of them acts on the central rail, the other on the ordinary wheels; both breaks are simple in construction, and are worked from the platform; the soles of under-frame are made of angle-iron, head-stocks teak, and painted black; rise of roof about five in., the body is varnished and well proportioned.

The Belgian Company for the manufacture of machines and railway material, exhibits a composite carriage; it is composed of two first-class, one second, and one third-class compartment; the body is framed of oak, and covered with iron panels; it turns under on the side about two in.; the bottom sides and end bars are about the same size and strength as those in the French carriages, while the pillars and other framing are much stronger. The standing pillars are bevelled half-inch, and have no checks upon them except a rebate $\frac{1}{8}$ by $\frac{1}{8}$ in. the size of lap-plate; the lap-plate is screwed on the edge of the door without being let in, and fits in the rebate provided for that purpose on the standing pillars; india-rubber is fixed round the inside edge of doorways to keep out the draught, and is covered with a mahogany moulding; the third-class quarter lights are represented on the outside by a sunk panel; the second class are square at bottom, with round corners at the top. The first class for the quarters have D lights, with round corners at top to correspond with the top of second and third class; one first-class compartment is trimmed with morocco leather, and the other with drab cloth, both of first-rate quality; the partitions above the trimming are veneered with bird's-eye maple, and divided into panels with mahogany mouldings; a band of walnut veneer, about three in. wide, takes the place of broad lace at the top of the backs, and also forms a border round the panels just

mentioned ; the roof is veneered with maple, and divided into panels, with a border round them to correspond with those on the partition ; the top side quarters are also veneered, and the standing pillars are lined with maple to match the finishing on the doors ; the mouldings on the doors are all fixed with ivory studs ; a small mirror is placed in a mahogany frame, and fixed over each quarter-light ; there are two mahogany rods to each net, and provision is made for both rods to be fixed in the brackets ; the second-class compartment is fitted up with cane-bottom seats and backs, with nets ; the rods are supported by brass brackets, the top part of partition is divided into panels by oak framing, the front edge of the seat-rail is worked in the shape of a double Ogee moulding, and has a nice effect ; the third-class compartment presents a well finished appearance ; the garnish-rail and inside ventilator-rails are framed into the door-pillars level inside, with a sliding ventilator above them ; the door-pillars and rails are grooved to take the casings ; the pillars show oak, the casing ash. The end partition and side-quarters are framed and cased to match the door ; the seats are hollowed, and screwed from underneath the seat-rail into the boards ; and iron net is fixed in the third class ; the glass-strings for second and third class are strong, they are made of two thicknesses of ordinary leather, sewn together. The curtains are blue in first and second class, and are fixed on spring-rollers for the doors, and slide on a brass rod for the quarter-lights, ivory rings being used ; the furniture is stronger than usual, but is badly finished. Door-handles are formed by a ball $1\frac{1}{2}$ in. in diameter, with a fluted stem four in. long, and $\frac{1}{2}$ in. in diameter at the largest end ; commode-handles are round, and extend across each quarter ; the form is irregular, the hinges are strong and well made, they are let in across the pillars to within a quarter of an inch of the inside ; the under-frame is made of iron, the soles are made of double T iron, headstocks of double angle iron ; there are no end longitudes or diagonals, the centre longitudes of angle iron, with a flat plate riveted across the middle bearers for the springs to rest on ; the buffer-springs are tied together with an iron band, the side chain-pins are fastened through the middle bearer, with spiral spring on the end.

PRUSSIAN DEPARTMENT.

J. C. Luders, sen., exhibits a Prussian first-class carriage, which is divided into four compartments, and is like most of the other carriages on the Continent, very plain outside ; it is framed together of oak, and covered with iron panels ; the bottom sides are cut away to allow the door to go through to the bottom ; the whole of the framing for body and under-frame is very strong, the soles are made of iron, the headstocks of wood, the two end compartments are trimmed with a light drab plush ; the seats are low and cased up at the fronts, the cushions make out for the lowness of the seat, as they are $10\frac{1}{2}$ in. thick ; one of the other compartments is fitted up with two sofas made of mahogany, and trimmed with corded red silk ; the other compartment is fitted up with six seats, three on each side, which, when drawn together form three beds ; the seats and backs are trimmed with red silk plush, the top parts of partitions are covered

with white silk, the surface being raised up with satin flowers ; the roof in this compartment is divided into fifteen panels made of white wood, and polished ; a gilt moulding is placed round each panel, and forms a great relief. The lace used in this carriage is exceedingly good. The furniture is bold, massive, and good ; the door and commode-handles are like a great many used in this country for shape, quantity of metal, and well-finished appearance ; the hinges are large, strong, and well made ; the quarter-lights are oblong, at right angles, and each light is fixed into its place by sixteen brass round headed screws. The step-boards are in two widths, and are hinged to fold together ; when unfolded they form a platform for the guard to go from one carriage to another, &c., while the train is in motion ; the panels are fastened on with pins, and as there is no moulding placed along the bottom sides or end bars, the pins show through the paint, and spoil the general effect of the outside appearance.

I have now given a description of the principal carriages exhibited, in order to show the extent of the exhibits, the general construction, the quality of workmanship, and the materials used in the manufacture of railway-carriages on the Continent. I have before stated that Great Britain is not represented in the railway-carriage and waggon department, as she ought to have been, and as might have been expected from the proud position she has held, and still holds in the railway world. Still it is worthy of our notice, that while we adhere to the old system of building railway carriages and waggons entirely of wood, our neighbours and competitors are substituting iron for wood where practicable ; for instance, they use iron for their panelling, and they are now trying what advantages can be gained by using Bessemer steel for that purpose ; again, a great number of their under-frames are made of iron, while others are partially so, some are trying double T iron for soles and headstocks, others double angle iron, while a third portion believes that single angle iron is strong enough for all practical purposes ; which is the best time and experience alone can decide. Iron is used largely in the construction of luggage vans, some of them being made entirely of that material ; it is also used in the construction of ballast trucks and low-sided goods waggons, the stanchions of which are made of angle iron ; the sheeting and bottoms of these waggons are made of 1½ deals, and in a few cases two inch deals are used for that purpose, which shows that the sheeting for their waggons is but little more than half the strength of the sheeting for similar waggons in use in this country ; and, as will be seen by the description of their carriages, the waggons are not an exception to the rule in this respect. The French in particular seem to have one object in view, and that is to make their rolling-stock as light, and in some respects as cheap as possible (the durability of which has to be tested). This is to be seen in the scantling of all their carriages and waggons, the lightness of their glass frames, the commonness of the glass, and also in the small quantity of metal used in manufacturing the furniture. As regards the outside appearance generally, they are very plain ; there is not a bit of heraldry of any description, and on a great number of carriages not a fine line is to be seen.

I am surprised at this, as the French people in particular are held up to us as examples worthy of our imitation; we are continually being reminded of their high appreciation of painting and the fine arts; and yet the Railway Companies have no crest or distinguishing coat-of-arms on their carriages. The insides are equal to, if not in some respects superior to our own. The new third-class carriages are being divided into separate compartments, with partitions up to the roof, and each compartment is fitted up with nets, the rods are iron, and in some instances the nets are made of iron, while in others they are made of string; the second-class carriages are fitted much more comfortably than those in this country, the first class have a very light and neat appearance, and some few of them with a coupé end are fitted up with beds as described; these are exceptions, and have to be paid for as such. Any persons wishing to avail themselves of the extra advantages these carriages afford have to pay twenty-five per cent. more than the usual fare. At the commencement of the report I stated that a few of the continental nations were able to supply the demands of their respective countries, and to compete with us in manufacturing for the other parts of the world. The statistics of France for the year 1865 are a proof of the accuracy of this statement; the number of construction shops inclusive of railway companies, are, for carriages and waggons, nine in number,—viz., six in Paris, two in Alsace, and one at Lyons. The total number of carriages and waggons built at these establishments in the year 1865 was 1,439 carriages, at a cost of 8,000,050*f.*, and 31,056 waggons, at a cost of 19,800,000*f.*; of this number 420 carriages, at a cost of 2,700,000*f.*, and 1,868 waggons, at a cost of 3,200,000*f.* were exported; and I have no hesitation in stating that I believe the statistics for Belgium and Prussia are equally as conclusive upon this point as those of France. This, coupled with the depression of the money market, will to a great extent account for the shortness of trade in the railway carriage building for the last few years in this country. I visited two of the manufactories in Paris,—the Orleans Railway Company's repairing shop; the other was a private construction shop belonging to Messrs. Chevalier, Cheilus, jun., and Co. From what I saw at these places I formed the opinions expressed in the introductory part of this report which has reference to our continental friends having taken advantage of the opportunities afforded them by the manufacturers of this country. I saw a few specimens of planing machines of the ancient type, but I also saw others of the most modern date; the latter planed the boards all round, grooved both edges for the iron tongues, and beaded one edge, at the same time both the beading and the grooving were perfectly true. By the side of one of these planing machines was a self-feeding band saw; it was being used for the purpose of cutting deals into boards; the self-feeding part of it saved a great deal of hard work, and the saw only took 1-16th of an inch each cut, while a circular saw generally takes 1-8th or 3-16ths each cut: therefore when three boards are cut by a band saw out of a 3-in. batten, they are a bare 1-8th of an inch thicker than those cut by a circular saw. At both places there was a log mill, both of them were much about the same as those in this country, and each one converted its own timber. The saw mill at

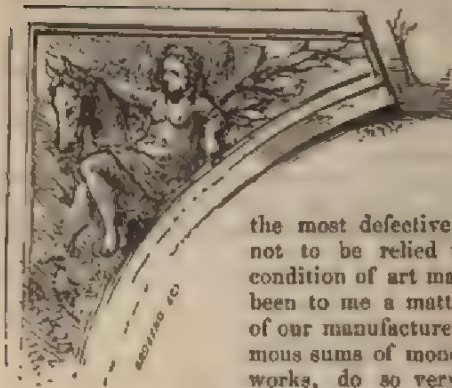
Messrs. Chevalier, Cheilus, jun., and Co., was well arranged for working purposes; the band saws take the place of circular saws to a great extent, and their mortising machine was the best I have seen, and is an improvement on those in use in this country. It is in the form of a side boring machine, and can either be used as a boring or mortising machine; the bits used for boring are the same as those used to make the mortises; the bits are not of the ordinary description, but take the form of a chisel divided at the end. The advantages gained by it are these: it bores the hole, makes the mortise, and clears out the core at the same time without its having to be picked up and down, and carried from one machine to another two or three times. I saw in course of construction the small carriages intended to be used for crossing Mont Cenis. The order consists of 200 railway carriages; and it was hoped some time ago that they would have been made in this country. The rate of wages in France is from 4, 5, 6, to 7 francs per day, according to the abilities of the workman; most of the work is done by the piece, and the few who contract for the work of their employers get from 18f. to 20f. per day. The number of working hours per day is 10; overtime is paid at the rate of 8 hours per day.

All the great Railway Companies have organised for their employes funds for assistance in times of sickness and superannuation, and most of the Companies vote to these funds an amount equal to that subscribed by their servants.

ON DESIGN.

By FRANK J. JACKSON,

DESIGNER AND ART-TEACHER, BIRMINGHAM.



Over a gateway to a riding-school, Paris.

WHILE collecting material for the subjoined Report upon Electro Plate Design, I purposely devoted most of my time to an examination of the ordinary wares, knowing full well that it is here that art is

the most defective. Special or show pieces are not to be relied upon as indicating the true condition of art manufacture, and it has always been to me a matter of surprise that so many of our manufacturers, while spending such enormous sums of money upon costly and unsaleable works, do so very little towards raising the artistic character of those articles upon which their trade chiefly depends. I have not strictly

confined myself to remarks upon electro plate, but have made a few notices of glass and ornamental brass foundry. It is scarcely possible to separate glass altogether therefrom, while the principles of decoration in brass work are identical with those involved in the production of electro plate. It was my intention to have fully illustrated this paper; but finding, after making a few sketches in the Exhibition, that sketching was prohibited by the officials, I was compelled to relinquish my intention. What few sketches I did obtain I have inserted. In my concluding remarks I have endeavoured to rid myself of prejudice. In referring to the industries of France, as contrasted with those of England and the art-education of both countries, I have stated matters, perhaps, it will be thought, too strongly, but, feeling conscious of their truth, I throw myself upon the good sense of those who prefer plain out-spoken facts to indefinite and complimentary criticism. The remarks are made from an earnest desire to see the manufacturers of this country in their true position, and not from any desire to grumble or find fault.

CLASS XXI.

GOLD AND SILVER PLATE.

Odiot shows a large centre piece. Style, Louis XIV., with figures well modelled. Most of their other works are in the Renaissance style, having a Greek tendency. There is a tea set in the Indian style, the decoration being produced by etching the ground massed and gilt thus, the effect rich and good. They have also another tea set, with kettle and tray, the ornamentation being produced in the same manner, but in line as well as mass.



Christofle and Co. exhibit a service belonging to His Majesty the Emperor of the French. Embossing, very good, the foliage decorating each piece being different, indicating the use of each article. They have a silver urn and service, raised decorations in green and red gold, the effect being very chaste and delicate. Also a small tea service of a diaper pattern, similar to an English one, but only chased on the outside, instead of being beaten up from the interior, it has a much superior look, and would be executed at a much less cost, thus furnishing a notable instance of the fact that tasteful decoration need not always be expensive. Much of their table plate is ornamented by engine turning in a very effective manner. They also show many specimens of decoration by etching. M. Christofle mentions this process amongst others in a short article, prefacing the catalogue of gold and silver plate (page 254, English edition).

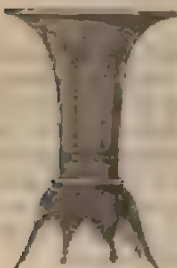


Fanni re Brothers have some fine specimens of repouss  in iron and steel. Two shields: one with the subject, the overthrow of Satan, in an unfinished state, has very high relief, and is exceedingly effective. This house also exhibits some very good mounted glass, engraving thereon very artistic. Style chiefly Renaissance.

H. Duponchel. In this display there is a very excellent tea and coffee set, in the Moresque style, the ornaments produced by etching, the ground being gilt. Also a candlestick in the same style, produced in the same manner, effect very artistic. There is an additional tea tray,

decorated in the Chinese style, also etched in mass and line, having a rich effect, but the cast border is very indifferent.

A. L. Fizaine. Tea, coffee, and other services, ornamented with engine turning, well elaborated. General style of work exhibited, Louis XVI. One or two tea sets were decorated with small medallion enamels.



N. Cailar and Bayard. Ordinary work, coarse as to manufacture. Style of ornament predominating, Louis XIV. Noticed one or two cruet frames and double salt-cellars of a better character. One handle I thought simple and good in style. (See woodcut.)



A. A. Turquet shows tea and coffee sets. Bright engine turned ground, relieving a diaper pattern. Also a silver coffee set, white pattern upon a dark oxidised ground, divided by gold bands, and an etched coffee set in line and mass.



P. Poussielgue Rusand exhibits a very beautiful enamelled altar.

Debruge, junr., has a gilt tea service and plateau decorated with red and black enamel, in the Greek style. It is in a severe but pure taste.

F. Barbédienne's exhibit consists principally of works in bronze and enamel, but nevertheless shows some exquisite specimens of silver plate, amongst which are two candlesticks executed in repoussé, style, Louis XVI.; workmanship beautifully delicate. There is also a very fine specimen of incrustation of precious metals on a bronze casket. The inlays of metal are in relief, and are elaborately chased. The effect produced is very charming.

Amongst the examples of enamelling, which are numerous, there is a cabinet, of small dimensions, the whole surface of which is covered with enamel, being composed of a number of pieces skilfully joined by metal fittings. The bronze works are in the purest taste.

HOLLAND.

Most of these exhibits are plain and wanting in purity of outline

The only piece worthy of notice was a small candelabrum, the branches of which were decorated with ornaments cut out of sheet metal.

PRUSSIA.

Shows very little good silver work. Most of it is coarse in design and execution. The exceptions are in the cases of

Sy and Wagner, whose works are rather of a severe character, well carried out, clear and distinct in detail. They exhibit a large circular shield, tea and coffee services, dessert stands, &c., and

Vollgold and Son, who exhibit a large centre piece and plateau. It is well and boldly finished ; style Roman.

RUSSIA.

Shows some very excellent metal work.



Sasikoff has a case of very charming works in silver and silver-plate. There is a large urn, with tea and coffee set of good and simple form, decorated with gold band upon a silver ground ; very chaste effect. Also a large quantity of niello work applied to tea sets, spoons, napkin-rings, and snuff-boxes. Near to this case is a large specimen of repoussé in very high relief, most of the heads of the figures being detached from the background.

In this section there are exhibited several urns in brass of good form, with a variation in the handle of the tap.



DENMARK.

V. Christesen shows some very excellent claret jugs, tea-pots, &c. Surface decoration produced by engraving in outline, the mass being slightly deadened upon a polished ground. The effect is very delicate. Here I observed an uncommon attachment for the handle of a sugar-basin.

The Lottery of Arts and Industry exhibits some beautiful work in silver; an urn in particular—the handles good, the ivory well introduced. (See woodcut, next page.)



UNITED STATES.

Tiffany and Co. show a few excellent tea sets, &c., both as to form and decoration, the flat chasing described in the catalogue as repoussé being especially noteworthy. It is carried out to the fullest extent. Nothing equal to it in either the French or English departments. One of the pieces has a band of chasing—griffins and foliage; the drawing exceedingly good. Altogether they are lessons in the art of decorating utility.

GREAT BRITAIN.

Elkington and Co. are conspicuous amongst the English exhibitors. The majority of the works shown are French in design, but the character

of manufacture and finish is as



decidedly English, and in this respect they exhibit a great superiority over the French works of a similar kind. This peculiarity is perhaps still more noticeable in the ordinary electro-plate, the surfaces of which have great evenness and regularity. Amongst the special works of art here exhibited is the "Milton Shield," executed in repoussé as an example of minute chasing. It is superb. The Princess of Wales' table also is repoussé. There is also a gold vase richly jewelled, with a silver-gilt dessert service to match in the Indian style. The general effect is very brilliant. Several works in enamel are also shown. Amongst the tea services there is one of an Oriental pattern, good

in form, while the application of stamping in the general decoration is effective, and in excellent taste, affording a suggestion as to what might be done with this process of "economic repoussé."

H. Emanuel shows several pieces of repoussé work produced by an English artist, shield, tazza, &c. Although not up to the French works, they exhibit many points of merit. This is the only house that I am aware of that has endeavoured to develop native talent in this particular branch of art work. They have also a claret jug, the decoration of which is rather novel, consisting of oval beads in bright silver upon gold ground (see woodcut.)

Hancock exhibits some fine art vases; modelling heavy and deficient in brilliancy. One pedestal had a good effect; it was covered with velvet and perforated metal work laid on; Style, Celtic.

Hardman and Co., amongst other choice works, show a cup or vase made for Mr. T. S. Kennedy, of Leeds, illustrative of Alpine Ascents. Although an excellent example of metal working, in design it has a scattered look, the emblematic figures being so unimportant, take away from the special character of the piece. The figures are executed in niello.

Skidmore's Art Manufactures Company has an excellent display, showing some good niello and coloured sealing wax introduced into ornamental designs incised in brass hinges, &c., &c.



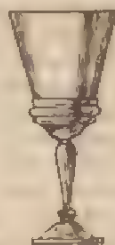
FRANCE.

Monot.—In this exhibit there are some beautiful specimens of table glass. Forms exquisite, inspired, no doubt, by the old Venetian glass, of which there are many examples in the Louvre, (see woodcut, p. 213.) One candlestick is of a most fairy-like elegance.



There are also many specimens of glass mounted with gilt metal. One in particular, a casket for enclosing a liqueur-frame, struck me as being very good. As far as I remember it was after this fashion. The plates of glass forming the sides and top were richly engraved, but not to such an extent

as to obscure the contents. My attention was also arrested by a small but simple form of centrepiece, entirely made of glass, and a goblet. Nothing extraordinary in the way of engraving; very little heavy cutting, and scarcely any examples of the application of studs of coloured glass.



AUSTRIA.

Lobmeyr exhibits a great variety of glass. Their specimens of the combination of metal and glass are very striking. Amongst the number is a chandelier of a very graceful design. The foundation of the work is metal, with glass enrichments.

In the English section Dobson shows some very good examples of engraving on glass; style renaissance. The workmanship of a high order, and superior in this respect to the French. Forms of glass rather heavy.

Green has some good specimens of "jewelled" glass. Others there are which are overdone, and therefore have a tawdry effect. Much of the glass here shown is very heavily cut—a fault too common in the English manufacture.

FRANCE.

Schlossmacher and Co. exhibit some very beautiful chandeliers and candelabra, mostly of a Greek character, depending for effect upon purity of line rather than on a profusion of ornamental detail.

GREAT BRITAIN.

Winfield and Co. show a very good collection of chandeliers, some of the smaller ones being remarkable for simplicity of outline. The application of ornamented tube to both chandelier and bedsteads, as shown in this exhibit, is deserving of more attention than it has yet received, while its use might be well extended to other trades. Some of the pattern tubes are very excellent. There is here a very rich bedstead in the renaissance style, with emblematic figures of night and morning.

Peyton and Peyton show a very good metal bedstead, with head and foot rail of a radiating pattern.

Philly exhibits chandeliers of very great merit, both in design and execution, simplicity of line being well preserved.

VISITS TO FRENCH MANUFACTORIES.

Lefevre.—Manufacture of clocks, candelabra, and statuettes in the style of ornamentation mostly Louis XIV. and XVI.; very little of the "Neo Grec." The castings are made in metal moulds.

Christoffe's Electroplate Works.—The plating is done upon brass not upon white metal as in England. Most of the hollow ware is spun upon the lathe, the more expensive being stamped. Cast handles, &c., for dishes, are finished by stamping, instead of chasing. Style of work predominating, Renaissance; the greater part of the surface decoration is produced by engine turning, etching and engraving: plan surfaces generally of a very inferior character, not to be compared with English manufacture.

Barbédienne's Bronze Works.—Saw the method in operation for reducing models to a given scale. Was much struck with the enamelling which is here carried on to a large extent, the system and order adopted are admirable. The enameller has a *complete palette of colours after firing*, and a *complete drawing* of the work to be executed set before him. One piece in progress consisted of a vase, 3 ft. 6 in. in height, without join of any sort. The depth of the cells for the reception of the enamel is much greater than what I have been in the habit of seeing, almost double. I am of opinion that there is a great advantage in this. In the various shops I passed through, the comfort of the occupants seemed to be well studied. The show room afforded a fine treat; here were to be seen besides bronzes, marble busts, rare specimens of Japanese enamel, carvings in jadestone, paintings and sketches by eminent artists. Truly the principal must be a lover of art.

REMARKS.

In entering upon an examination of industrial designs as displayed in the various metal and other exhibits of the Paris exposition, it is but natural that the student should first of all direct his steps to the French department, the generally acknowledged head quarters of all that is excellent in art manufacture. Here the show is of such ample proportions and so beautifully arranged, that it becomes a matter of some considerable difficulty, at first view, to form a correct idea of the merits or demerits of individual works, or to make a just comparison between such works and those of other countries.

While we cannot but be fully sensible of the fact of the superiority of the French as a nation in decorative art, we are not to rest in mere admiration of their works, but rather, by careful and minute study, to ascertain wherein their great strength lies, what are their deficiencies, and to endeavour, as far as possible, to see in what respect and to what degree they differ from the productions of other nations.

One noticeable feature in French industry is the universal application of art; no object being too mean for adornment, and every article capable of being turned into a thing of beauty, receives its share of attention at the hands of the artist. To such an extent is this love of

art carried, that mere mechanical finish is sacrificed at the shrine of beauty, and we find that the very things we pride ourselves upon and boast of achieving, are by them set at nought in favour of aiming at a higher quality. In England I find the matter is entirely different, where there is an attempt to develop a better style of art, it is almost sure to be of a special and restrictive character, and it invariably occurs that the same house that will produce rare and costly works, fails to devote that attention to ordinary wares, so as to raise their artistic character, being content with ugliness so long as the objects are perfect in polish, and have passed through the routine of processes that are ever dear to the mechanical mind. Again, the vitality of French art is very remarkable; in their search after novelty, they show a wholesome disregard for that which has gone before, and strike out with an amount of artistic daring that is startling, yet nevertheless governed by such taste, that their very extravagancies pass unchallenged, and surprise us into admiration. Their treatment of the human figure is perhaps of a more daring character than even their use of ornament, both of which are rendered with great warmth and brilliancy, qualities which are never neglected, whatever style of decoration they may adopt; for example, the style now so much in use is the Greek, but instead of its being the cold, severe style of the past, in their hands it becomes revived, rivalling their favourite renaissance, and earning the name justly bestowed, of "Neo Grec."

But this activity is by no means confined to the development of artistic design, but is displayed quite as much in their bringing into practice all the known processes with their various modifications by which that art is to receive its final expression. Hence in the French metal department is seen enamel work largely developed, niello and damascening, while the decoration on their ordinary plate is rendered by engine turning elaborately executed, engraving, etching, both in line and mass, flat chasing in outline and otherwise, repousse, and by the combination of metals, taking advantage of every variety of colour produced by the use of different alloys. This range of processes is much wider than can be seen in any other section of the Exhibition, while some of the processes, if not almost peculiar to them, are at least more fully developed; take for instance their revival of repoussé, and the use of that simple, but artistic method, etching. Of this latter process, there are scarcely any examples beyond the French division; the only two specimens I saw were in the English, and they were special pieces.

But here our admiration of French decorative art must halt for the present, for, notwithstanding its splendour, it has its defects, and these it is necessary for us to examine, if we would have a complete picture, and not a one-sided view. The defects to which I would call attention consist, to my mind, in an undue straining after *effect*, and in mistaking mere *prettiness* for *beauty*. In the first, examples are numerous of artistic and constructive principle being sacrificed to the production of effect. Take an illustration out of the Exhibition, viz., the building of the Louvre. Here we have a noble structure, its heavy masses relieved by columns and statues; but for what purpose are the columns if not for effect? Certainly they are not necessary in point of construction. One would have thought, at first sight, that they were there for the



support of some great weight ; but, no, they are simply adjuncts supporting nothing but some insignificant brackets, evidently designed to smooth over a difficulty which could never have arisen had proper attention been paid to constructive truth. The tendency to prettiness is also great, too much attention being given to decoration, to the neglect of the severer attributes of beauty in the form of the objects to be decorated ; or, in other words, simplicity is ignored in favour of complex enrichment. We now come to a consideration of the aspect of industrial art, as displayed in the exhibits of other countries, selecting only those that are most striking, and the most profitable for study.

The Prussian show, small in extent, offers a marked contrast to the French, as to the diffusion of the artistic element. Most of the examples of ordinary plate are execrable, their display of art, properly so called, being restricted to special and decorative works, the majority of which are of a high character, but less brilliant and heavier in treatment than the French, and without their daring ; yet, nevertheless, exhibiting a consistency and thoroughness in the working out that is deserving of careful study.

Russia again shows great uniformity in the application of art. The process of niello is here developed to a very great degree, and their application of it to the ordinary articles of commerce is exceedingly good, furnishing an art lesson not easily to be forgotten. For illustration, take the niello on spoons, where decoration is desired, but where smoothness is a desideratum on account of the ease in cleaning. The superiority of this kind of decoration over the raised is, I think, very decided, when, in the one case, the difficulty of cleaning and the inevitable damage to the ornaments in relief are considered ; while, on the other hand, we see that the beautiful effect of niello is enhanced and brought out more fully by the friction that necessary cleaning demands.

The general decoration is of a simple and severe character, and many of their forms are noticeable for their firmness and energy.

The United States' show of silver work is very limited. Although they cannot boast of quantity they may fairly boast of quality. The forms of the various articles exhibited are well considered. While the decorations are beautifully designed, and carried out with patient care, the judgment with which the different "mats" are used is deserving of great praise, and demonstrates the extent to which the process of flat-chasing may be carried.

Compared with works of a similar kind exhibited by other countries, they seem to be perfect of their class, having no rivals. While other exhibits rest principally upon rare and costly works, elaborated to the highest degree, this little display of the Americans rests upon humble works, proving that ordinary articles may be exalted and invested with a dignity that will entitle them to rank with the proudest achievements of industrial art.

It now remains to consider the aspect of English industry as it appears

in the various exhibits, setting aside, of course, the French work, which is to be observed in many places.

The progress that has been made within the last few years," as here demonstrated, gives us good ground for present congratulation and hope for the future; but still I think it will be readily admitted that we are not up to our position as a nation. Foremost we should be; for this we should strive. The elements of success are in our midst, and all that is required is that we use them with wisdom and discretion. Any one who has paid but slight attention to the history of industrial art of late years will remember the changes that have taken place; how that most mischievous and unprincipled of all styles, the "Rococo," held almost universal sway; how it became replaced by a period of "naturalism," whose life of sentiment has gradually sunk into feebleness, until now it has scarcely life enough to assert its own existence; while, at the present time, Design wanders irresolutely, without any settled purpose, playing fast and loose with antique styles, the expressions of former times, now showing an affection for the Greek, and now for the brilliant Renaissance, ever and anon revealing its secret desire after the spirit that animated and brought into life the grand styles of the middle ages. With industrial art in such an unsatisfactory condition, it becomes necessary that we should inquire into the causes that hinder its proper development, and prevent a more rapid progress being made. The causes, I believe, are numerous, but a statement of some of the principal will suffice for present purposes. The chief obstacle I believe to be the *apathy of the public*. So long as its utilitarian requirements are satisfied, it cares very little for art, and is content with inferiority, not to say ugliness of design, in articles of daily use, provided they are substantial, and radiant in polish. Hence those who should demand excellence really patronize mediocrity, or something even lower, by their indifference. But this is not all. So widely spread is this feeling, or, rather, want of feeling, that, as a necessary consequence, it breeds a low estimate of art in manufacturers themselves, and brings about results greatly to be deplored. Too often we find that designers are treated in much the same way as are ordinary mechanics, and are expected to *think by the hour, or invent to a given price*, while their training is conducted upon similar principles. The moulder or fitter, whose term of apprenticeship is sufficient for the mastery of his business, receives the same amount of recognition, when he arrives at maturity, as the student of design, who must of necessity have devoted much of his time after work-hours to the study of art, and the vexed question of industrial design. What wonder, then, if designers themselves become indifferent, and, under the weight of such deadening influences, lose energy and interest in the work; or what wonder if manufacture fails to keep within its pale the high talent which, in spite of all obstacles, has developed itself from time to time.* But, amidst all this art-lethargy,

* The fact that many artists, after reaching a certain point of excellence, leave manufacture altogether, either to become painters or sculptors, or else to follow an entirely different calling, is greatly to be regretted. I have no doubt that there are other reasons for their so doing besides the one I have named; but still it is pretty certain that want of proper appreciation is the chief. Designing for manufactures is looked upon by the general public as a lower kind of art, while the practitioners are

happily there are signs of an awakening. Many circumstances have induced a comparison between the art manufactures of this and other countries, and people now begin to ask for art where before they ignored the necessity for its existence.

Manufacturers, ever alive to the questions of demand and supply, bestir themselves, and rush to the French for aid, which they obtain, either by bringing over designers or by the purchase of patterns, while native talent is quietly set on one side, or condemned, forgetting how little has been done to foster and encourage it.

The introduction of foreign artists is undoubtedly a wise policy, but to limit our endeavour to improve art-manufacture to this step alone is extremely reprehensible or to say the least very unpatriotic. Had an equal amount of wisdom been displayed in the past by giving Englishmen the same opportunities for developing their capacity for art as are possessed by other nations, we should have been spared the humiliation of having to seek foreign assistance, and should ere this have produced a school of industrial art worthy of the name, and of our character for self-reliance. I am well aware that there are many instances of manufacturers doing much for the encouragement of English design who have faith in their countrymen, and believe that art is not a special gift to one country more than another; all honour to them for their endeavours. Another retarding cause to the progress of art-manufacture arising out of the low estimate in which art is too generally held, is the influence that purely commercial men bring to bear upon the subject. In manufactories where artists are engaged all their projects are submitted to the varied criticisms of men who have never devoted a single day to the study of art, but who nevertheless, "pook-pook," condemn, and devise alteration, until the idea of the designer is destroyed, and his interest in his work abated, hence placing themselves in the position of directors of the public taste, resting their claims to be so considered on their knowledge of "what will sell," or rather what has sold, for although the latter is often a good guide for the transaction of the future it is not therefore of necessity an infallible one.

Collateral with this, are other practices which bring reproach upon our manufacturers, viz., the employment of workmen wholly uneducated in art to patch up articles with patterns derived from various designs, and subjecting them to no artistic supervision whatever. Having no conception of the harmony of lines, proportion, and still less of style, the most incongruous combinations are produced and sent into the market, while in the carrying out of designs the proper means requisite to ensure success are neglected. The designers and the workman are too much separated, and as a consequence many a design is ruined in the process of manufacture, for the want of a little timely advice which the artist is specially qualified to give.

So much for past and present obstacles, and now for a consideration of future action by which art may be freed of her fetters, so that she may, while asserting her own dignity, confer a blessing upon the commerce of

not regarded as artists in the full sense of the term, although the same amount of intelligence may be exerted in producing an article of utility in an artistic form as may be spent in the painting of a picture, or other work of art.

the country. It has often been contended that the superiority of the French art is the result of a natural capacity the like of which is deficient in us. This position I believe rests upon very shallow ground, and will in the long run be found to be altogether incorrect, the contrast presented being the result of difference of aim, and not of the want of capacity. While we have devoted ourselves to the perfecting of material processes of manufacture, and the substantial character of our utilities, the French have brought their energies to bear upon decoration. Both have arrived at corresponding results, each admirable in its way. Both are awakening to a sense of their deficiencies, and each has much to learn from the other. For us the question is design, therefore the methods by which they, the French, have achieved their success are just those that should command our attention, and strict art-education in France seems to have been always of a twofold character, viz., general and special; by general, I mean such education as is afforded by public works, and special, that which is afforded by schools, so that at the same time that the artists or producers are being educated, an influence is brought to bear upon the general public, whereby they are rendered capable of appreciating the various works of art that are being constantly brought before them. In the streets of Paris objects of art in some form or other are ever present to the eye. Statues, fountains of exquisite design, and public buildings with sculptured enrichments. While the ordinary street architecture is of an ornate character, presenting artistic features of a very high order, turn where you will you are beset by art, and from it there is no escape. The study of art in such a place must of necessity commence at a high level. But in London and many of our manufacturing towns the case is wholly different; in these places the influence of art is scarcely felt, the majority of the public buildings serve rather as examples of what to avoid than as stimulants of the general taste, and artistic inspiration, whilst surrounded by so much ugliness, is utterly impossible. With such an aspect as London and other of our cities present, it is vain to expect much advancement in the general appreciation of art; it is hoping against hope, for it is only by external works that the public can be reached and educated into becoming the patrons of that art which it is the object of our schools of design to develop; the encouragement of the latter without the former is folly and must end in disappointment.

Again the facilities for French students of industrial art are very great. Besides the ordinary academies they have what are called technical schools, where, in the same institution drawing is taught in which a knowledge of a trade to which art is to be applied can also be acquired, the fees for which are almost nominal. This class of school is I think of the utmost value, and clearly demonstrates that the French do really possess "schools of practical art." The system of drawing pursued, as far as I could judge from an examination of many folios of drawings shown in the Exhibition, is very excellent. There seems to be no over anxiety for fineness of outline, while in shading the readiest method is generally adopted, more importance being attached to the realization of form, and less to mere manipulation. Great stress also



Ordinary Street Lamp, Paris.

seems to be laid upon drawing from the human figure and flowers from nature. Most of the specimens I saw were very spiritedly executed, but scarcely up to the English notion of neatness. The method of teaching carried on in our Government schools offers a marked contrast to that of the French. Examine the drawings that are occasionally exhibited, and it will be found that an immense amount of labour is spent upon fineness of line and mechanical finish. In this respect I think we are decidedly in error, in fact we begin at the wrong end; fineness and neatness of line are the results of much practice and in early training are of much less importance than the acquisition of correct notions of size, proportions, and forms; to insist too strongly on the former, is to jeopardise the realization of the latter. Again, I do not think we have sufficient drawing from nature, from the human figure or flowers, and much of the students' time that is spent in making copies from the "flat," would be more effectually employed in drawing from *objects*. Drawing from the "flat" is only the beginning of the end, whereas, it too generally appears as if copying was the end itself. Still further, we are entirely without any institutions that I am aware of, that will compare with the French technical schools, the importance of which can scarcely be overrated. Our schools of design are not at all comparable with them, for they give no evidence of a special course of instruction any more than is shown by ordinary private academies.*

If, then, our system of art education is deficient, and facilities for improving the public taste are wanting, we can scarcely expect to cope with our continental neighbours. What they have found it necessary to do to promote and maintain their position, we must to some extent be prepared to follow; what they have achieved by special study, we may not hope to reach except by adopting similar means.

* I may be reminded of the applied designs that are occasionally exhibited by our Government schools of art, but in reply I would appeal to practical men if their existence does not confirm my statement, and go to prove unmistakably the want of a special course of instruction in accordance with the end desired. That the schools are deficient in this respect is hardly a matter of wonder, when we remember how few masters there are who have any real idea of the applicability of art to manufacture. The qualification of a master should not rest upon his knowledge of art alone, but upon a practical acquaintance with manufacture also.

The establishment of a "Kensington Museum," splendid though it be, with supplementary schools in their present condition, will not suffice to realise the end so much desired. The general public must be educated in art by familiarizing them with artistic works and an improved street architecture. Utilitarianism must be aroused to a sense of its short-sighted and suicidal policy in rejecting decoration, by which trade has been damaged and commerce sacrificed. Museums will have to be multiplied, and every town of any manufacturing importance must have its store-house of art treasures, from which the student and art workman may gain inspiration. Lastly, our schools of art will need remodelling, and will require energetic support to relieve them from the half-starved condition in which too many of them are, so that they may be prevented from sinking into mere drawing academies, which is the present tendency, and become what they really should be—schools for the promotion of industrial designs. If this question of decorative art is taken up in the spirit it demands, success will be ours. I for one believe that if the same energy is brought to bear upon designs that we have hitherto spent in developing the processes of manufacture, we shall yet have a school of art second to none, inasmuch as our national love for the substantial and for correctness of construction will ever prove to us safeguards against that vice of art—prettiness of effect gained by the sacrifice of truth, a vice which disfigures other schools whose better qualities we so much admire.



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